

# THE MARINE REVIEW

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No. 2

## PITTSBURG STEAMSHIP CO.'S CAPTAINS.

"Our meetings are more successful every year in promoting the best interests of the company and of each man in the fleet. We gather to talk over our affairs and the experience of the past is one of our future guides. We realize fully what great efforts Mr. Coulby, our general manager, is making to make things run to the best advantage, and we certainly appreciate it."

The foregoing statement, made by one of the captains in the Pittsburg Steamship Co.'s fleet, shows conclusively that the annual meeting of the management and captains was a huge success. It also shows that the men realize the spirit of the meetings and enter into them heartily, easily feeling that their interests are the company's interests. Three days were devoted to the meeting, a banquet being held the evening of the last day at the Colonial hotel, the management of which did everything possible to make things comfortable and pleasant.

The net results of the meeting were many, the most important being the recommendations for new aids to navigation, the appointments which included six mates' promotions, and the advancement of several captains. The four 600-ft. steamers ordered for 1907 delivery are to be commanded by captains W. B. MacGregor, George Bell, E. M. Smith and J. W. Morgan. The newly made captains are W. P. McElroy, W. F. Hormig, W. J. Storey, W. E. Warner, H. T. Kelley and Daniel McGillivray. Promotions among the captains were not general, but several of the men were advanced to better boats. As a result of the changes, J. H. Denner, Daniel Graham and David Bouille are taken off as barge captains to be assigned as mates on steamers. All the mates

were assigned, many being shifted to better boats.

The committee on aids to navigation recommended in a report, which was sent to President Wm. Livingstone, of the Lake Carriers' Association, that a permanent lighthouse and fog signal attachment be established at Split Rock, eighteen miles northeast of Two Harbors, there being no light of any sort between Grand Marais and Two Harbors. Another reason is the uncertain deviation of the compass on the north shore of Lake Superior and no soundings 'till a steamer is up on the beach.

"During the last three years," the report states, "considerably over \$1,000,000 worth of vessels and cargoes have been wrecked in the vicinity of Split Rock point. We think that a lighthouse and fog whistle established near that point will do away with the serious danger to lives and property, which our experience has shown is due to the absence of any warning light or signal there."

Other requests of the committee were for a permanent lighthouse and fog signal at the easterly end of Gull island in the Apostle group on Lake Superior, and the dredging of Gull island shoal to the northeast. A permanent lighthouse and fog signal is asked for White shoal, Straits of Mackinac, and a lightship and fog signal be placed on Southeast shoal of North Manitou, sometimes called Russ Point.

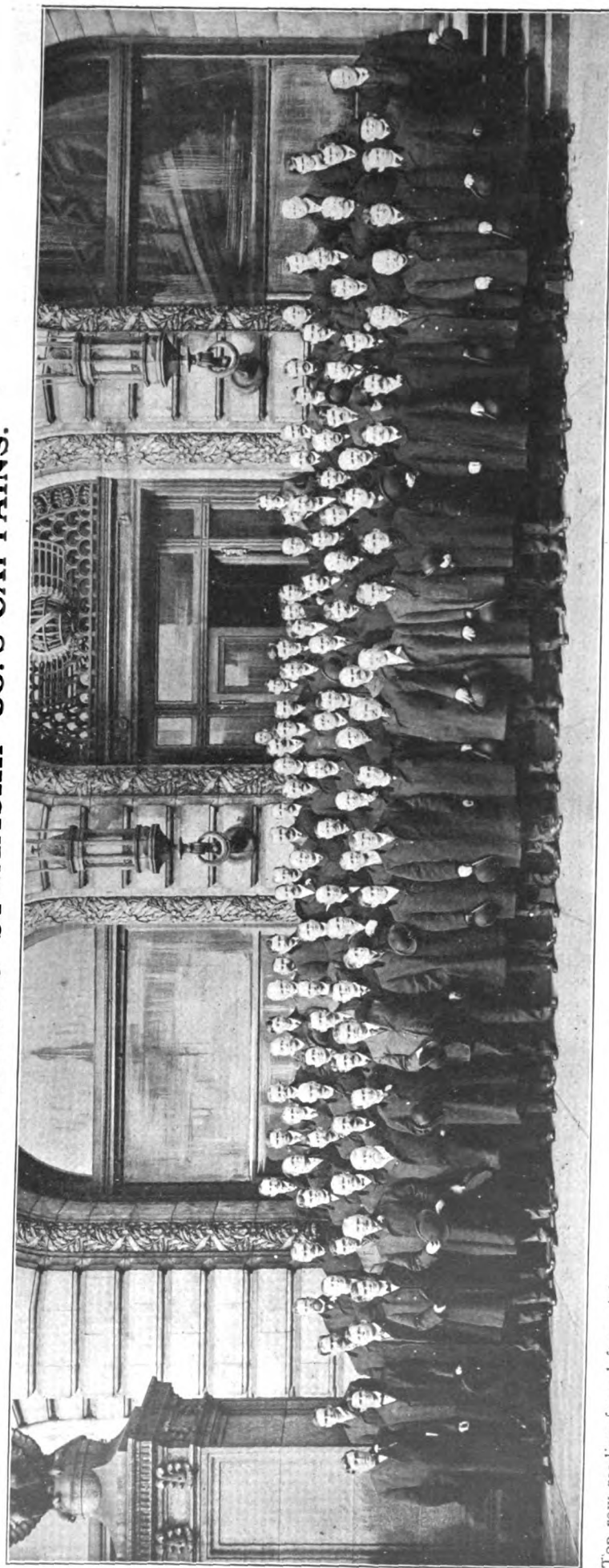
The barge captains' appointments, which were given out after those for the steamers, are as follows. Smeaton, J. R. Parker, master; Nasmyth, W. H. Dick, master; Fritz, John Y. Sprowell, master; Manila, A. Beaupre, master; Marsala, Louis Leonard, master; Roebing, Frank Cottrell, master; Bryn Mawr, George Kendall, master; Maia, J. H. Disette, master; Manda, O. W. Holdridge, master;

Holley, Frank Hebner, master; Bell, C. Mulholland, master; Jenney A. Nordahl, master; Thomas, David Williams, master; Carrington, H. Saveland, master; Corliss, Geo. W. Balfour, master; Krupp, Fred Rae, master; Maida, H. Harris Jr., master; Martha, Wm. McDonald, master; Magna, H. M. White, master; Malta, Charles Gordon, master; Marcia, George J. Maloney, master; No. 117, John Brown, master; No. 118, Louis Larsen, master; No. 130, Fred Kirk, master; No. 131, P. Gustafsen, master; No. 132, M. Christopher, master; No. 133, Herbert Oliver, master; No. 134, A. H. Hand, master; No. 137, Robert Thompson, master.

The banquet was presided over by James H. Hoyt, of Hoyt, Dustin & Kelley, and the following toasts were responded to: "Progress we have made," Harry Coulby; "How a lawyer would sail a steamboat," H. A. Kelley; "A long pull, a strong pull, and a pull all together," A. F. Harvey; "A free pass on a coarse freighter," H. H. McKeehan; "Changes I have seen on the great lakes," Capt. Dennis Sullivan; "The captain's view point," Capt. John Lowe. Capt. George P. McKay, secretary Lake Carriers' Association, was present at the banquet.

It is understood that a successful test of the rock crushing machine that the Empire Engineering Corporation of New York intends to use in deepening the lower harbor of Buffalo was held last week. This company's contract calls for the clearing of a channel 23 ft. deep and 200 ft. wide from the foot of Georgia street to a point a few hundred feet below Duch Bill's. This improvement is part of a general plan for permitting deep draught navigation to Tonawanda. The crusher drops a projector weighing 46,000 lbs. and which crushes the rock by impact, doing away with the use of dynamite.

## PITTSBURG STEAMSHIP CO.'S CAPTAINS.



Top row reading from left to right:

J. R. PARKER, W. F. HORMIG, GEORGE W. BALFOUR, GEORGE RANDOLPH, DAVID WILLIAMS, H. M. SAVELAND, GEORGE BURT, J. H. DISSETTE, GEORGE B. KENDALL, FRED HOFFMAN, M. K. CHAMBERLAIN, GEORGE BELL, F. J. CROWLEY, THOMAS WILSON, J. Y. SPROWELL, T. J. CULLEN, A. BEAUPRE, W. J. STOREY, C. MULHOLLAND, M. A. BOYCE, R. F. HUMBLE, W. P. MCELROY, A. G. MCLEOD, H. WALPER, C. S. BOYCE, H. M. WHITE, J. H. DENNER, W. H. KILBY, NEIL CAMPBELL, JOHN MCGARRY, DAVID BOUILLE, W. H. CAMPAU, FRANK RICE, GEORGE MCCALLUM.

Second row reading from left to right:

JAMES LEISK, W. C. ILER, GEORGE BOWEN, W. H. DICK, DANIEL GRAHAM, E. O. WHITNEY, JOHN NAHRSTEDT, H. HARRIS JR., H. J. REGAN, F. A. BAILEY, A. P. CHAMBERS, C. J. GRANT, H. CULPE, H. GEGOUN, J. A. FERGUSON, W. E. STOVER, C. GEGENHEIMER, JOHN GEMMEL, DANIEL MCGILLIVRAY, GEORGE J. MALONEY, A. J. TALBOT, GEORGE REECE.

Third row reading from left to right:

GEORGE BANKER, E. L. SAWYER, JACQUES LAFRAMBOISE JR., JAMES BURR, W. S. HOAG, A. MONTAGUE, S. C. ALLEN, A. HANSEN, C. H. CUMMINGS, W. W. SMITH, MARINE SUPERINTENDENT; A. R. ROBINSON, W. J. HUNT, A. C. SMITH, C. D. SECORD, JOHN F. PARKE, J. A. WALSH, JULES M. GREINER, A. W. BURROWS, J. WOOD, H. T. KELLEY, E. M. SMITH, J. W. WESTCOTT, W. E. WARNER.

Bottom row reading from left to right:

JOHN NOBLE, O. W. HOLDRIDGE, A. E. BARTEL, J. C. BELL, W. H. MOODY, A. C. CHAPMAN, H. G. HARBOTTLE, C. G. ENNES, E. C. COLLINS, TRAFFIC MANAGER; A. F. HARVEY, ASSISTANT GENERAL MANAGER; RICHARD JOLLIE, W. W. WATTERSON, SUPERINTENDENT OF HULL CONSTRUCTION; J. W. MORGAN, F. B. SMITH, CHIEF ENGINEER; R. A. WILLIAMS, LOUIS HAUSHEER, A. NORDAHL, JOHN BURNS, W. B. MACGREGOR, JOHN LOWE, C. A. WEITZMAN, H. N. HOBART.

*Photo by Cleveland Plain Dealer.*

**WORK IN THE SMALLER YARDS.**

The Davis Dry Dock Co., Kingston, Ont., have orders for several small boats of 60 ft. in length and under.

C. E. Bird, Sagatuck, Mich., is building a ferry boat 60 ft. long for J. C. Everett, 125 South Clark St., Chicago, Ill. The boat will cost \$3,500 and will be fitted with a gasoline engine of 15 H. P.

The Sheriff Mfg. Co., Milwaukee, Wis., are supplying the machinery for the tug Peter Reiss, building at Sturgeon Bay, Wis., for Oley Groh, of Sheboygan, Wis. The engine of this tug will be single high pressure, 24 x 26 in. They will also supply the machinery for the towing tug building for Reibolt, Wolter & Co., and for a fishing tug building for Martin Fren & Co., Milwaukee, Wis.

A. R. Kenyon, Marine City, Mich., rebuilt and repaired boats to the value of \$50,000 during the past year.

James Davidson, Bay City, Mich., is building a couple of very large scows, but has no new construction in the way. The dry dock is full of work. Extensive repairs are being made on the schooner Chieftain, on account of her recent collision with the steamer Troy. Substantial work is also being done on the steamer Jay Gould and the tug Charlie O. Smith. The steamer Cartagena is undergoing extensive alterations, having surface condenser and salt water machinery installed for her trip to the coast.

Riebolt, Wolter & Co., Sturgeon Bay, Wis., are building a wooden tug named Peter Reiss for Groh Bros., Sheboygan, Wis. The tug will be 90 ft. long and will cost \$15,000.

W. H. Mullins, Salem, O., is very busy in building launches from 16 to 35 ft. in length and from 3 to 60 H. P. His annual output of steel rowboats is now about 8,000.

The Midyear Steel Boat Co., Detroit, Mich., is now putting out a complete line of small pleasure launches from 16 to 25 ft. in length.

The East End Boiler Works, Detroit, Mich., is building a fire box-boiler 10 ft. by 16 ft., allowed 125 lbs. pressure for the steamer Jesse H. Farwell, owned by Wm. H. Follette, Tonawanda, N. Y.

D. M. Swain's Marine Engine Works, Stillwater, Minn., is building a side wheel steamer for A. Guthrie, of St. Paul, Minn., to be used as a pleasure boat. The steamer will be a duplicate of the David Swain except that it will be 10 ft. shorter. Machinery is also being installed in a steamer for the Royal Route, Natchez, Miss. The engines are triple compound of the Swain patent oscillating type.

**SITUATION AT BUFFALO.**

Buffalo, Jan. 8.—The winter season is now fully launched, but with no appearance of winter except that the lake fleet is tied up just as if it was held fast by ice. It is now fully six weeks since the icy season is to be looked for and yet not a cove nor a slip contains a trace of ice. This open state of the harbor has enabled the fleet owners to lay their vessels up with the utmost ease and with the smallest expense. Had they chosen it would have been easy to sail right along till now, that is to say, if the insurance people could have been made to see the point.

Buffalo has about the same-sized fleet as in other seasons since the fashion to winter so much grain here afloat set in. This is a way the shippers, especially of wheat, have taken to get even with the railroads for failing to move the grain during the lake season. It turns out, too, that as much grain, flour and flaxseed were received here during the past season as in any recent season, while iron ore receipts steadily increase are likely to do so right along, as they do not depend very much on the roads. Buffalo is smelting her own ore mainly, and is fast becoming an iron center.

Quite a good part of the grain-laden fleet is this winter laid up at the breakwater in the outer harbor, which is a very quick and easy way to dispose of a 500-foot steamer, while to lay her up inside takes a deal of hunting and calculation, to which must be added an inspection of the bottom of the river, to see of it is not too near, and includes a good dock fee. It is all free outside. There are now twenty-two big vessels tied up for the winter outside. Work on the fleet of grain carriers to be unloaded at once is expected to come to an end this week, as there was only about 200,000 bus. waiting at the end of last week. The elevators are full of storage grain, which is a great change for the better, as they often used to winter empty.

Of the winter-storage fleet the following have wheat: W. L. Smith, F. T. Heffelfinger, J. C. Wallace, A. Stearn, E. F. Howells, J. B. Cowle, M. C. Smith, L. C. Smith, H. Coulby, J. P. Walsh, Panay, H. B. Nye, Sinaloa, Bransford, Wisconsin, S. S. Curry, Sonora, H. A. Hawgood, C. B. Leonard, H. B. Hawgood, M. A. Hanna. The following have flaxseed: Capt. Thomas Wilson, F. R. Robbins, A. Carnegie, J. M. Jenks, Sonoma, Martin Mullen, H. Steinbrenner, J. G. Butler. The Thomas Adams, W. D. Rees and M.

C. Elphicke have oats and the following have mixed cargoes: A. G. Brower, wheat and rye; Saxona, wheat and flaxseed; C. M. Warner, Chili, oats and barley; Luzon, G. W. French, oats and rye. The cargoes foot up 5,552,239 bus. of wheat, 2,706,554 bus. of flaxseed, 1,605,644 bus. of oats, 195,325 bus. of barley and 145,500 bus. of rye, a grand total of 9,805,262 bushels.

It is a very significant fact that of this fleet of thirty-nine vessels twenty-two are five years old or less, thirty were built during this century of half a dozen years and all but one of the others go back no farther than the '90's. Nothing could point more surely to the great change made of late in the build and fashion of the lake fleet. The new steel pattern has done much towards simplifying the lake trade. In grain alone it has so entirely cut out the leaky bottom that it has almost entirely driven out of business the once prosperous and somewhat numerous wet-grain merchant. The odd thing about it is that it has not done for insurance what was expected to do. The lake bottom is as much of a menace to the new bottom as it was to the old.

The growth of passenger traffic, the need of deeper harbors and better docks are in line with the changes in construction, but there is soon to be another problem to face, the need of small vessels. A ship builder at Tonawanda said the other day that there was to be quite a large amount of work done there on mostly wooden hulls this winter and he had received several offers to take hold of two-deck steamers of the older pattern and cut them down into barges. An effort will be made to save the smaller craft in order that they may save in turn the trade of such ports as Tonawanda, now the largest receiving port of lumber in the world, and yet never to see any of the vessels of the larger size.

Lake Ontario shippers are also stirring about to increase the tonnage on that lake. The same ship builder reports that there are offers made for quite a number of vessels to go to that lake and enter the local coal trade, with some idea of trading also to the upper lakes if that trade should spring up again. There is more demand for local Lake Ontario coal carriers and apparently the demand is still to grow if car shortage continues. Will the present small-sized fleet last till the need of small ports and local traffic is well fixed and outlined, or will builders have to provide new vessels before it is known what it is to be?

JOHN W. CHAMBERLIN.

Among American naval architects Mr. Frank E. Kirby stands very high. Many are the floating palaces on the great lakes that testify to his skill and creative ability, proclaiming him

The hull is constructed of mild steel, divided into ten compartments by watertight cross bulkheads extending

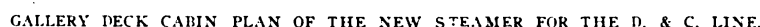
A steadying tank of 100 tons capacity is provided amidships to check the rolling in a heavy sea. This, while a common practice in warships to obtain a level plane for gun fire,



from keel to main deck.

A double bottom is fitted, extending nearly the entire length, divided into ten compartments, which provides for

is unusual in passenger steamers and is unknown on the lakes with the exception of the car ferries in the Straits of Mackinac.



falo and City of Erie, and in fact most of the finest vessels on the chain of lakes. His crowning achievements, however, among lake craft is the great

the safety of the ship in event of grounding, and can be used to vary the trim and draught by means of water ballast. Powerful pumps are

An additional rudder, operated by steam steering gear, is fitted at the bow of the ship to facilitate maneuvering the ship in narrow waters. This



steamer City of Cleveland which was launched on Saturday last at the Wyandotte yard of the American Ship Building Co., for the Detroit & Cleveland Navigation Co.

This new steamer which is to ply between Cleveland and Detroit is of the following dimensions: Length, 404 ft. over all; 390 ft. keel; 54 ft.

fitted for this purpose.

Her bottom frames are 5-in. by 3-in. by 10-lb. angles, side frames 6-in. by 3½-in. by 15-lb. channel and inner bottom 3-in. by 7.2-lb. angles, all spaced 30 in. centers. The intermediate frames are 5 in. by 3 in. by 10 lb. The double inner bottom frames are 3½ in. by 10 lb. when required for machinery.

will enable her to turn in little more than her length in the upper reaches of the Detroit river while fueling or peddling.

The ship has seven decks: The main deck is of steel, sheathed with wood to deaden the noise of handling cargo for which the main portion, forward of the machinery, is used. The steamer's deadlights are of sufficient



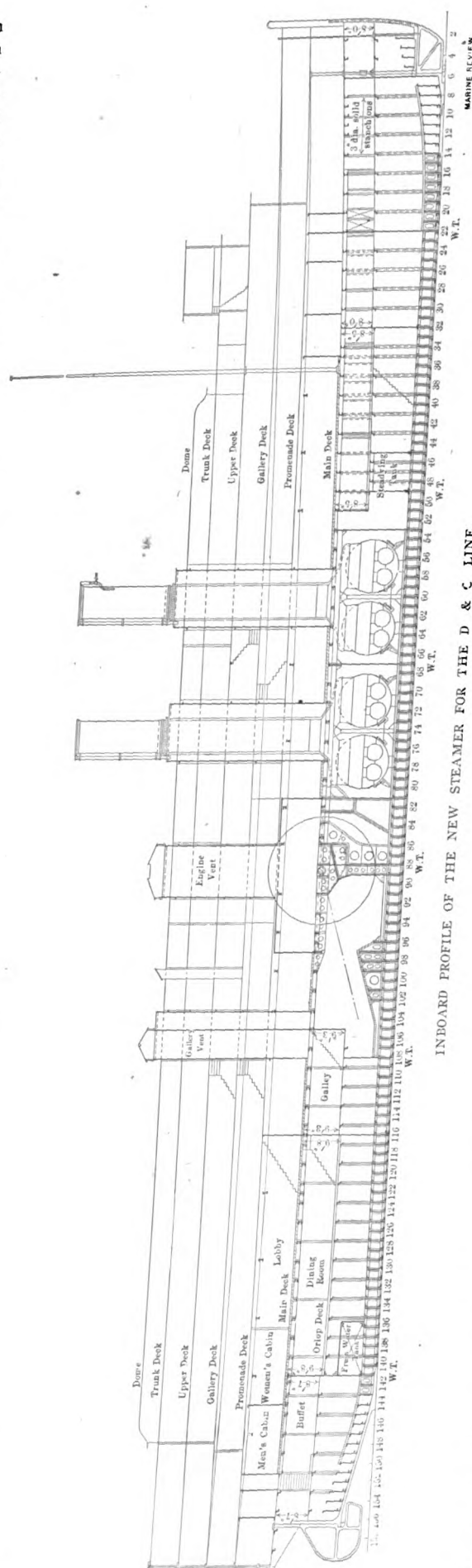
size to enable a man to pass through them if necessary—an outgrowth of the catastrophe in New York harbor a few years ago when many passengers were burned to death in an ocean liner lying at dock because the deadlights were too small for one to crawl through and escape had been cut off in other directions.

The passenger entrance is located aft of the machinery, and forms a large lobby fitted with wide stairs extending to the upper decks, on which are located the staterooms, parlors and public rooms. Additional access is provided to all decks by a passenger elevator with entrance off the lobby. One of the novelties will be an open fire place forward in the salon.

The dining room is located on the orlop deck entrance being from the main deck lobby. Two private dining rooms are fitted in connection with the main dining room.

The galley, pantries and storerooms are located on the orlop deck immediately forward of the dining room, and are constructed entirely of steel and made fireproof. All main deck houses are constructed of steel.

The staterooms—342 in number—include twenty parlors with baths—are arranged on three decks, access to them being provided by double gallery extending the entire distance around the main saloon. A few of the parlors on the gallery deck have private verandas.



A large convention room is provided on the gallery deck. Access to it is provided by means of stairs amidships leading from the promenade deck.

A wireless telegraph station (Clark's system) is fitted adjoining the convention room. A complete telephone system is installed, with an instrument in every room. Ten lines are provided for shore connection when the steamer is in port.

For protection against fire in addition to the usual equipment required by the United States steamboat laws, a complete sprinkler system is installed, leading to the fire holds, main saloon and wing passages, together with a thermostat automatic alarm system in every room which will give alarm in event of fire breaking out.

A complete electric lighting plant is provided of 1,500 lights capacity including searchlight of 5,000 candle power.

All of the staterooms and crew's sleeping rooms are provided with fixed washstands, supplied with running water.

A vacuum cleaning system is provided for removing dirt and dust from carpets and furniture. The ship is ventilated throughout with cool, fresh air with the McCreery system.

The propelling machinery consists of an inclined three-cylinder compound engine, the high pressure being arranged between the two low-pressure cylinders, the diameters of cylinders being 54 in. for the high pressure and 82 in. for the two low pressure cylinders, with stroke of pistons 8 ft., driving feathering paddle wheel 28 ft. in diameter, the paddles being 14 ft. long and about 4 ft. wide. The engines are fitted with Corliss valve gear. Eight cylindrical boilers are provided, located in two separate watertight compartments, the boilers being 13 ft. 9 in. in diameter and 12 ft. long, each provided with two furnaces 52 in. in diameter and fitted with Howden hot draft and allowed a working pressure of 160 lbs. per square inch. Two smoke stacks are fitted.

The auxiliary machinery consists of compound feed pump, fire pump, sanitary pump, fresh water ballast pump, hot draft and ventilating fans, double steam steering engine; two gypsy capstans, one deck capstan, and a combined steam windlass and capstan. Two air bilge and cooler pumps are connected to and worked by the low-pressure engine. Hand reversing gear is installed as is also a Nicholson log. An important feature of the auxiliary gear is the Akers emergency steam steerer, normally dormant with steam on engine, enabling it

her on the ways. The company had offered a prize of \$10 and an annual pass for a name for the steamer. It was won by Mr. J. R. Manning, of Cleveland, who wrote a letter that convinced the company that for sentimental as well as business reasons its leading steamers

combined, but she was put successfully into the narrow slip without any accident whatever. The launch was witnessed by Mr. James C. Wallace, president of the American Ship Building Co., Mr. Robert Logan, general manager, and Mr. D. C. McIntyre and Mr.



name of the present steamer City of Cleveland will be changed to City of St. Ignace. The secret of the new steamer's name was kept by the company practically up to the moment of launching, as the red burgee bearing the name had no sooner been flung to the winds than the ropes were cut that held

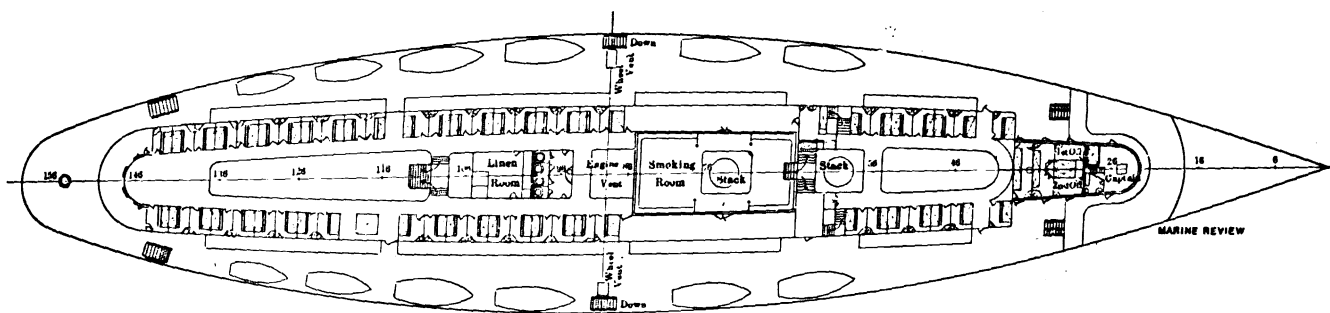
T. F. Newman from Cleveland. While as a piece of naval architecture this magnificent steamer is a credit to Mr. Kirby it is no less a credit as a decorative creation to Mr. Louis O. Keil who has made rare designs for it.

is in renaissance design, the passenger will be struck by its rich splendor. The walls will be in select bold figured, Mexican mahogany, beautifully paneled in marquetry with carved pilasters and capitals in antique gold, and supporting a cornice and ceiling adorned with heavily carved panels, finished solid in gold. The floor will be laid in interlocking rubber tiling, the color of design of which will be

the boilers, the hands are summoned to appear for duty, the pilot once more carefully inspects the steering gear, and the captain gives the signal to turn the prow seaward, for then it may be safely counted on that the last prolonged cold snap of winter has departed and that spring is at hand.

Last season the company was tempted to ignore its old friend and was misled by the seductive warble

carved frames paneled in antique metal applique. All will be in absolute harmony with the surroundings. About midship and directly opposite the forward staircase will be a women's writing nook finished in mahogany and partly enclosed by beautifully carved screens, while the side walls will be broken by rich mirrors. Dainty carved chairs and desks will constitute the furnishings of this room. At the



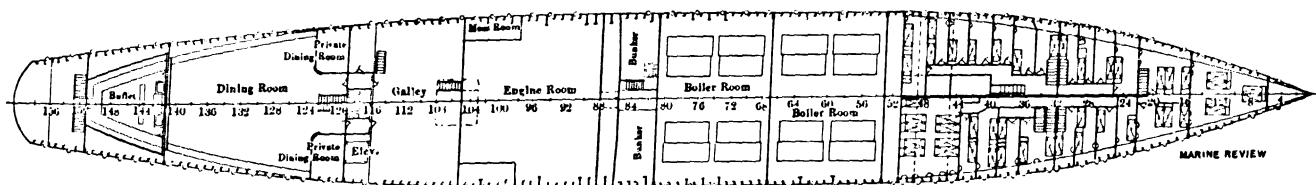
UPPER DECK CABIN PLAN OF THE NEW STEAMER FOR THE D. & C. LINE.

in keeping with decorations. Large luxuriously upholstered chairs in leather placed in groups for convenient conversation, will be scattered throughout the lobby. From the lobby one may enter the purser's and steward's offices and the baggage rooms. At convenient places there will be telephone booths and the passenger elevator. The main grand staircase and its approaches will be a triumph of art and cannot fail to ar-

rest the attention of even the most casual observer at once. Most interesting will be the carved balusters, being carried out in the renaissance style with a bold finish full of vigor and artistic feeling. Directly over the stairs will be a large open well extending fully 50 ft. in length, affording a full view of the grand salon above and displaying the great height of the interior. Extending from either side of the well, a beam supported by newel columns will be adorned with an interesting carved piece, the D. & C. emblem, a frog holding a carved clock, finished in old gold and verd. It may be interesting to know that the frog regulates the D. & C.'s time for the opening of navigation. As soon as his merry trill is heard, the fires are lighted under

of the robin to start out before the frog's thrill was heard, and did this to its sorrow. The robin proved a false prophet and the fleet was blocked for a time in ice. The frog, therefore, has been signally honored by the great steamship line, being chosen as its emblem.

Suspending from the ceiling will be heavily ornamented electroliers of beautiful design and finished in old gold. Ascending the broad open stair- forward part of the ship and connected with the first stack will be a large open fireplace with facings and hearth in marble. Fine carvings, paintings, mirrors and electroliers will adorn stairways leading to the gallery decks. The woodwork and ceilings of these decks will be finished in ivory enamel with panels in pearl gray relieved by carved relief work brought out solid in gold. The after end of the gallery decks will be screened off by charming



ORLOP DECK CABIN PLAN, D. & C. CO.'S NEW STEAMER.

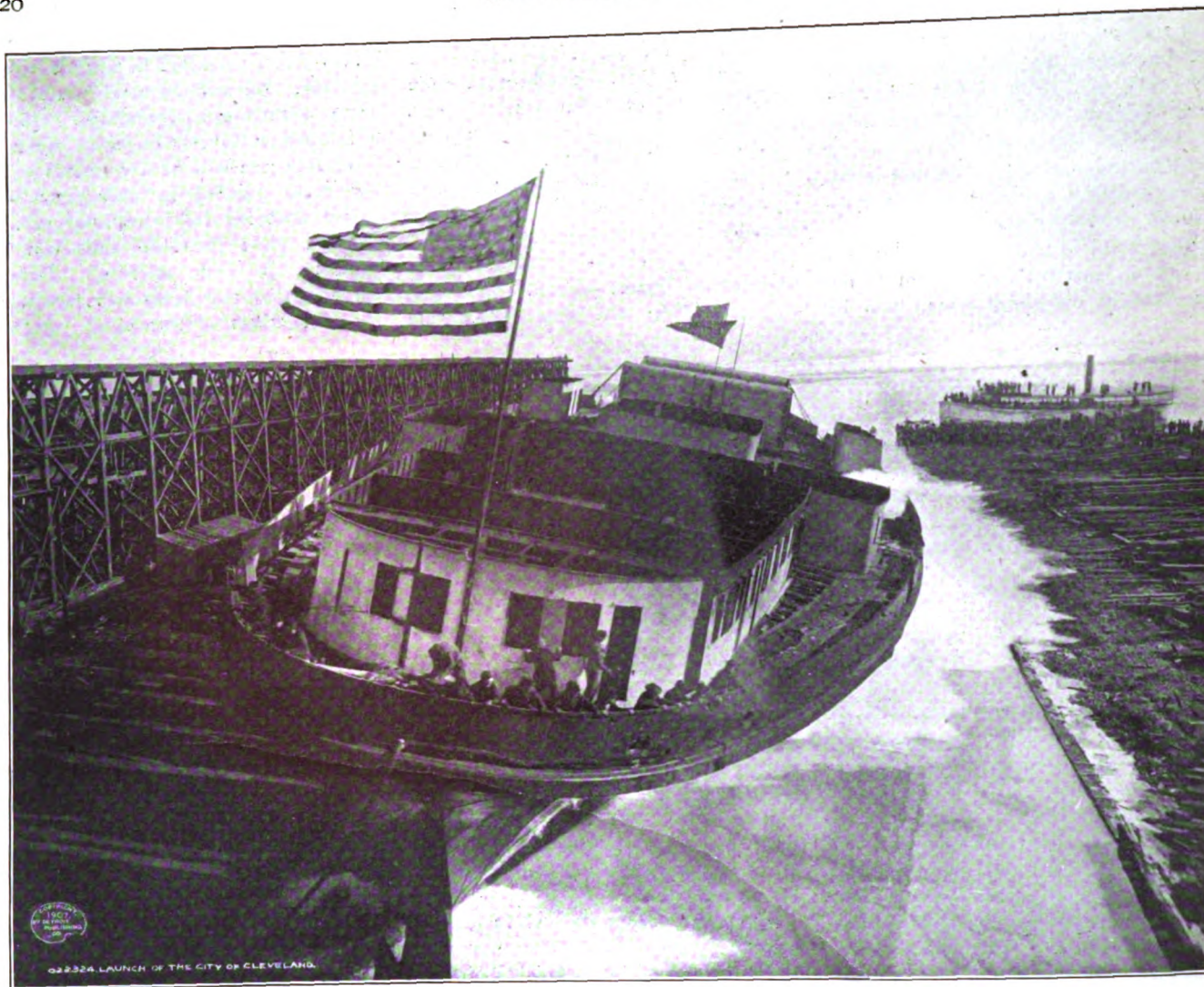
rest the attention of even the most casual observer at once.

Most interesting will be the carved balusters, being carried out in the renaissance style with a bold finish full of vigor and artistic feeling. Directly over the stairs will be a large open well extending fully 50 ft. in length, affording a full view of the grand salon above and displaying the great height of the interior. Extending from either side of the well, a beam supported by newel columns will be adorned with an interesting carved piece, the D. & C. emblem, a frog holding a carved clock, finished in old gold and verd. It may be interesting to know that the frog regulates the D. & C.'s time for the opening of navigation. As soon as his merry trill is heard, the fires are lighted under

way, one will enter the grand salon. All the woodwork, decoration, equipment and furniture of this salon have been most carefully studied, it will be finished in the style known as "Louis XVI." Walls paneled in the choicest and most perfectly and artistically figured Mexican mahogany, will extend along the entire length of the ship. Each of these panels will be a study in itself. This exquisite paneling will serve, as it were, as a frame in which rests the entire grand salon; the panels will extend from the promenade to the gallery deck, forming a wainscot which will be crowned with a beautifully carved cornice. On the floor will be spread the finest Wilton carpets in the shades of pearl gray, upon which will be placed soft cushion settees in old rose colored velvet with richly

glass screens with bays forming the women's boudoirs. From the bays a fine view of the main salon may be obtained. These screens lend the general appearance of brightness and delicacy to the more solid portions of the ship. These rooms will be in keeping with the main salon, decorated in ivory and pearl gray with carpets of old rose. The gallery fronts and stair balusters will be executed in wrought bronze finished in verd antique. The main ceiling will be a masterpiece of decorative art; it will consist of large panels of mural paintings bordered with richly carved frames. Surrounding these large panels will be ornamental panels in relief, finished in gold and interlaced and richly figured with flowers. Directly in the center of the ceiling and dividing the large





LAUNCHING THE NEW STEAMER CITY OF CLEVELAND INTO THE SLIP.

mural decorative panels will hang special ornamental electroliers finished in gold, designed and built in to form part of the decorations. The decorative paintings of the ceiling will be executed by eminent eastern artists.

Twenty parlors of exquisite splendor, executed in the Marie Antoinette and Colonial styles, will border on the grand salon. The walls and ceilings will be finished in ivory enamel and gold. The carpets covering the floors will indicate the predominating color and from them the colors will blend up the paneled side walls which will be treated with delicate ornamental and floral decorations into the ceiling itself, where they will be lost in panels of dainty paintings. Filmy lace curtains will hang from gold cornices covering the windows. Brass beds, soft upholstered divans, dainty tables and chairs will furnish the rooms. All upholstering will be of the most tasteful and luxurious character and in full keeping with the colors of the rooms. A bath room finished in white enamel will be connected with each parlor.

All staterooms will be finished in pure white enamel paints with carpets and furnishings of the high order. This paint is supplied by the J. A. & W. Bird Co., 31 Union square, New York. It is a beautiful enamel and so tenacious that a piece of pliable metal, painted with it, may be bent double without causing the enamel to exhibit any flaw or crack. The merit of this paint for a stateroom can well be imagined. Instead of the small inconvenient wash stands generally found in staterooms there will be commodious open basins with direct water connections. Every room will be fitted with bells, telephones and all manner of modern conveniences for the use and comfort of the passengers.

A distinctive feature will be the carved stairway leading from the gallery deck to the smoking room and convention hall, designed and executed in Louis XVI style.

These rooms will be done in harmoniously proportioned paneling of select and beautifully figured circassian walnut designed in the Elizabethian style. Two magnificently carved

lions finished in dull gold will form newels at the head of the stairs. Directly over the walls, paneling at either end of these rooms will be large lunette panels of mural paintings, executed by distinguished artists. These paintings will be of a supreme order and will be enhanced by heavily carved frames of dull gold. The ceiling, beams and carvings will be in circassian walnut, relieved by panels of heavily carved and finished in dull gold. Electroliers finished in dull glass will be designed in old lantern effects. Luxurious seats fastened and built into the wall will extend around the entire room. The upholstery will be in green leather, which together with the exquisite circassian walnut, the best nature has in store, will produce a pleasing and harmonious effect. The floors will be laid in interlocking rubber tiling in green, black and white, with a green marble base extending around the entire room.

Returning to the lobby, entrance is gained at either side of the grand staircase to the dining room in the hollow of the ship. This room will be of im-



posing size, having a length of nearly 70 ft. and extending over the entire width of the hollow. Much care and study have been given to the decorations, equipments and furniture of this room, which will be done in the L'Art Nouveau style. Massive carved newels will be at the foot of the stairs, a row of sideboards with artistically paneled doors in quartered oak and finished in forest green, will extend along the entire length of either side of the room and will be in strict keeping with the wainscoting, with which they combine. Directly above the sideboards, the walls will be spaced out in panels of carved grills, alternating with attractive china cabinets with which they unite. The ground work of the walls, ceiling beams and panels will be a pure china white enamel, ornamented and decorated in strong coloring. Beautifully carved pilasters and columns in oak finished in forest green support the massive beam ceiling. Much art will be combined with the lighting of this wonderful room; all electroliers will be of a quaint lantern design, finished in verd antique and so placed as to throw their soft rays of light upon the tables beneath them. The floors will be laid in large squares of green tile, the exact shade of the woodwork. At either side of the main stairway and opening into the main dining room are private dining rooms designed in the Flemish renaissance style. Wainscoting in quartered oak, will cover the walls. Quaint cabinets arranged for silver and cut glassware will be sunk into the walls and form a part of the wall paneling. The floors will be laid in oak parquetry while old brass lanterns of a Dutch design will be suspended from the ceiling. Odd furniture in forest green oak with chairs upholstered in bright yellow leather studded with nails will complete the furnishings of the main dining room, while that of the private dining rooms will be of oak, finished in silver gray with chairs upholstered in strong green leather and studded with nails.

Directly after the main dining hall and entered by a stairway leading from the main deck will be the buffet. Though last, this room will not be the least in beauty and originality. Here an entirely new departure in steamship decorations will be found. This room will be given a Venetian garden character. Heavy ceiling beams with lattice work entwined with vines will be supported by massive columns while the floors will be laid in large Venetian red tile. The side walls will be decorated in landscape

paintings producing the effect of many different miles and hidden electric lamps of soft blue will cause the blue ceiling to resemble perfectly the famous Italian skies by moonlight, while hidden electric fans will complete the deception of the cooling breeze fanning the Venetian garden. The seats and tables will be of the old mission style and connected with the columns. Add to this the upholstery of soft red leather cushions and one has a complete description of the new floating hotel which is to go into commission next June.

#### JOHN McLAUGHLIN.

John McLaughlin, who is proprietor of the McLaughlin Iron Works at No. 180 Center street, Ashtabula, is one of Ashtabula's self-made men. He formerly worked at his trade of ma-



JOHN McLAUGHLIN.

chinist, and three years ago he branched out for himself with a machine shop, which has grown to a pretentious and busy iron works. He operates a foundry in connection with his iron works and his equipment is complete enough to enable him to do any repair work on lake freighters. He has made many friends since he embarked in business, but he is too modest to discuss this feature of his work.

Rear Admiral James B. Coghlan, commandant of the New York navy yard, was placed on the retired list recently. He will, however, remain on his present duty until February, when he will be succeeded by Capt. Benjamin F. Tilley, who now commands the battleship Iowa.

#### MISCELLANEOUS NOTES.

Crawford & Reid, Tacoma, Wash., have just finished plans for a lumber barge to be 220 ft. over all, 40 ft. beam and 14 ft. deep.

The Hartford & New York Transportation Co., Hartford, Conn., is building a wooden barge 150 ft. long for its own use.

George W. Byles, City Island, New York, is building a 54-ft. yawl with a 15 H. P. motor, and a 30-ft. knockabout with a 5 H. P. motor.

A. J. Whaling, late purchasing agent for the Wisconsin Central railway, has been appointed purchasing agent of the Semet-Solvay Co., Syracuse N. Y.

The Canton-Hughes Pump Co., Canton, O., announces that it has purchased the business of the Snyder-Hughes Co., of Cleveland and the Canton Pump Co., of Canton, O.

The new Roberts boilers recently sold to Commodore E. C. Benedict have been installed in the Oneida and they are about ready for a trial trip, the piping, etc., being about completed. As soon as she has the trial she will go out of commission for the winter.

Saunders Bros., Saunderstown, R. I., are building a ferry boat to be named Newport for the Narragansett Transportation Co., Saunderstown, R. I. The steamer will be 150 ft. long and will be equipped with a simple compound engine 17 and 36 in. diameter by 24 in. stroke.

Capt. B. D. Wolff, of Kingston, N. Y., is going to install a No. 11 Roberts Safety Water Tube boiler in the steamer Morris Block to supply steam for a fore and aft compound 10 and 18 x 12". This boat makes the run from Poughkeepsie to Kingston, touching at all intermediate points.

At the annual meeting of Albany, (N. Y.) Harbor, No. 7, American Association of Masters, Mates & Pilots of Steam Vessels, the following officers were elected for the ensuing year: President, Ulster Davis, Rensselaer, N. Y.; first vice president, A. V. S. Craig, Rensselaer; second vice president, George McCabe, Rensselaer; treasurer, George W. Teeling; secretary, Charles D. Scott, Rensselaer; starboard master, Joseph Smith, New Baltimore, N. Y.; quartermaster, George Bernard, Watervliet, N. Y.; port quartermaster, James Scheehan, Schodack, N. Y.; port quartermaster, Edward M. Sickles, Athens, N. Y.; trustees, F. A. Hitchcock, H. S. Loucks, D. L. Scoville. Mr. Ulster Davis was selected as delegate to the meeting of the Grand Harbor at Washington on Jan. 21, and Mr. Charles W. Lodge was selected as alternate.



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## PREGNANT WITH POSSIBILITIES.

An eminent New York attorney, Mr. John S. Wise, has written to Secretary of the Treasury Shaw, suggesting that section 22 of the Dingley tariff act is not being enforced as intended by congress. As it reads, the section provides for the collection of an extra or discriminating duty of 10 per cent on all imports in foreign vessels, and on all imports coming into the United States from contiguous foreign territory where such imports are not the growth, production or manufacture of such territory. Only imports in foreign vessels that are protected against the collection of this extra duty through existing treaties would be exempt. The only treaty on this subject with Great Britain is that of 1815, and this merely exempts imports from "his Britannic majesty's posses-

sions in Europe" from the extra duty. Imports in British vessels from any other part of the world are subject to that extra duty.

When the Dingley tariff act went into effect in 1897, collectors of customs along our northern border began at once the collection of the extra duty of 10 per cent on all imports entering that were not the growth, production or manufacture of Canada, the effect of which was serious and threatened to be disastrous to the Canadian Pacific and other Canadian railroads. A great sensation followed, Speaker Reed asserting that section 22 "slipped in" to the act without the intent of congress. If our recollection serves, a British vessel with ore was assessed the extra duty in an American Atlantic port. The secretary of the treasury secured an opinion from the attorney general, in which the latter contended that congress had contemplated no change in the existing status of the discriminating duty policy, in enacting section 22. The first tariff act provided for the protection of American shipping through a less duty on imports in American than was collected on imports in foreign vessels. Four years later this plan was reversed. Thereafter an extra duty of 10 per cent was collected on all imports in foreign vessels above the regular duties that were collected on imports in American vessels. Much higher tonnage dues were also collected on foreign than were required of American vessels. Under these laws American vessels for sixty years carried an average of over 80 per cent of our entire foreign commerce. By treaties these discriminations were gradually discontinued. An act was passed in 1828 empowering the president, by proclamation, to suspend the collection of these discriminating tariff and tonnage duties when satisfied that other nations were no longer exacting them on our ships. British vessels did not enjoy the benefits of this last-named act until 1850. Since then discriminating customs and tonnage duties have been but rarely collected, although the statutes, providing for such collection, in more or

less abridged form, has been carried down from the first to the last tariff acts. It was in the Wilson-Gorman act, although radically amended in the existing tariff act.

At that time Senator Elkins had before congress a bill to repeal all laws and abrogate all treaties that interfered with the collection of this extra or discriminating duty. That part of the Elkins bill that repealed the laws against the collection of the extra duty was, in substance, incorporated in the Dingley act as section 22. In that form, the treaties still in force protect certain imports and vessels from the collection of the extra duty.

The secretary of the treasury ordered a cessation of the collection of this discriminating duty as soon as he received the attorney general's opinion. Later the United States Board of General Appraisers reviewed the acts of the collectors of customs that had assessed the extra duty. The law officer of the government who represents the side of the government in cases before the Board of General Appraisers, under instructions, presented as the side of the government in this case merely the opinion of the attorney general. Attorneys claiming to represent commercial organizations, but who by their zeal seemed to represent Canadian railroads, were there to protest against the collection of the extra duty. No one was before the board to explain or defend the action of the collectors of customs who had collected the extra duties. A citizen was represented by an attorney who contended for the enforcement of the act as it reads. The Board of General Appraisers decided in accordance with the opinion of the attorney general, and so the law has since that time remained a dead letter.

If, as it is stated Mr. Wise has suggested, the secretary of the treasury makes up a case in order to bring before the United States courts a judicial determination of the meaning and intent of congress in enacting section 22—which, considering all of the circumstances in the case, should have been done nine years or more ago—the proceedings will be intensely in-

teresting. As it is it is possible that executive action has nullified an act of congress the enforcement of which would not only have brought many additional millions of dollars into the United States treasury, but that would, by this time, have caused the building of a large fleet of American ships for our foreign trade as well.

#### A NOTABLE CONVENTION.

Announcement is made that, beginning on next Monday, and continuing over the succeeding day, a convention will be held in Washington for the extension of the foreign commerce of the United States. President Roosevelt and Secretary of State Root, it is also announced, will address the delegates, which are to be appointed from all parts of the United States. Other members of the cabinet, a large number of the governors of different states, and other men of eminence will participate in the proceedings of the convention, which will close with a banquet on the evening of the sixteenth.

The most efficacious method by which to build up our foreign commerce is with an American merchant marine. By this we mean a marine consisting of mail lines and on itinerant cargo vessels, sail and steam. If we will extend the protection of our government to our sea-going ships similarly to the protection already extended to our other national industries—as in fairness should be done—there will be not only a notable increase in our foreign commerce, and it will not only be more stable, but a great American merchant marine will also come into existence, of incalculable value to the United States in time of war, as has been pointed out by both the war and the navy departments in official reports to congress.

In his speech before the trans-Mississippi commercial convention, at Kansas City, on Nov. 20 last, Secretary of State Root said that an American merchant marine would do the most to promote an increased trade between the United States and South America. He stated that our protective tariff, which no one would repeal, was responsible for the high wages

paid for the construction of ships in this country, and for the high cost of their operation, and that the government must give back to the ship owners what it had taken away from them through the operations of the protective tariff. He also said that our government must pay to American vessels an offset to the subsidies given by foreign governments to their ships which compete with ours. If Secretary Root will talk along the same lines for a general American merchant marine, and if President Roosevelt will sturdily back him up, there will still remain a strong hope of favorable action by the present congress on the pending shipping bill.

#### AROUND THE GREAT LAKES.

George Lynn has been appointed superintendent of hull construction for the Pittsburg Steamship Co.

The meeting of the Board of Supervising Inspectors of Steamboats will be held in Washington next week.

Capt. A. Beaupre, of the Manila, is located at Toledo this winter, in charge of the Pittsburg Steamship Co.'s repair work there.

James O. Gallagher, second mate on the steamer George Stephenson last season, is keeping ship on the steamer Simon J. Murphy at Toledo, this winter.

Robert Cummings, chief engineer on the steamer Fayette Brown, returned recently from Milwaukee, where he laid her up, but will only remain here a few days. He expects to spend the winter at St. Clair.

Wm. H. MacLachlan, who lives up in Lambton county, Ont., reached the city last week to take up his nautical studies with Capt. Sam Gould, in the Wick block. Mr. MacLachlan was a wheelsman on the steamer Maruba last season.

Capt. H. G. Harbottle, who was promoted by general manager Coulby from the command of the steamer Manola to the steamer George Stephenson, will be located at Superior during the winter. He is looking after the work on the Pittsburg Steamship Co.'s boats there.

Many romances have culminated at St. Clair, but when Capt. B. T. Haagen, of the car ferry Ashtabula, is thought to have capped the climax when he won a bride there last winter. He was looking after his boat, but found time to woo the daughter of Capt. A. G. Tappan, of the steamer Frank H. Peavey. The captain and

his wife are now keeping house at Ashtabula harbor.

The steamer James Laughlin has been placed in the Ecorse dry dock. Twenty-six plates will be taken off the steamer to repair the damage done by grounding at the Lime Kilns.

Capt. Fred C. Watson, master of the steamer Van Hise, who has a host of friends, worried them greatly at the Pittsburg Steamship Co.'s meeting last week by arriving on the scene nearly a day late. The worry was caused by the report that he was seriously ill with pneumonia. His appearance later relieved this worry and there was nothing more to mar the auspicious occasion.

Capt. C. D. Secord, master of the steamer Mariposa, brought his family to the Pittsburg Steamship Co.'s meeting, and one of the pleasant incidents between sessions was the sunshine which his nine-year-old daughter Anra G. Secord and her cousin, Ruth Smith, aged thirteen, spread around. Miss Smith is the daughter of Capt. W. W. Smith, marine superintendent of the Pittsburg Steamship Co.'s fleet.

Capt. H. Harris Jr., of Woodville, N. Y., who is listed among the "ciscoe chasers" of the Pittsburg Steamship Co.'s fleet, felt rather cheerful at the recent meeting in Cleveland. Before he came up, he was the owner of an eighty-acre farm, but while here he sold it for \$1,000 more than he paid for it, and he had the use of it five years. He now figures on buying another. Capt. Harris, whose home is just two miles from Henderson, N. Y., will sail the Maida the coming season.

Capt. W. E. Warner, of Algonac, Mich., who was promoted from a mate's berth on the steamer Geo. Stephenson to a captain's berth on the La Salle, at the Pittsburg Steamship Co.'s meeting, owns an eighty-acre farm on the banks of the St. Clair river. His son runs it when the captain sails, but during the winter, the head of the house takes great pleasure in turning to himself. One of the features of the farm is a gasoline engine which is used for cutting up feed and other useful purposes.

#### S. S. WINONA FOR SALE.

FOR SALE.—The S. S. "WINONA," 2,085 gross tons register, as she now lies, afloat at the harbor of Collingwood, Ont., where she can now be seen, and particulars of her condition ascertained.

Sealed bids, accompanied by certified checks, for 10 per cent of the amount of the bid, to be delivered by noon, Jan. 17th, at the office of Lloyds Agent, R. Parry-Jones, 321 Perry Payne Bldg., Cleveland, O., U. S. A., where bids will be opened in the presence of intending purchasers. The right to reject any or all bids is reserved.

# LAKE SHIP YARD METHODS OF STEEL SHIP CONSTRUCTION.

BY ROBERT CURR.  
DECK HOUSES.

Fig. 119 shows the deck house aft completed. Fig. 120 shows the interior of the after deck house, viz.: The spar deck plating, stairway, engine casing, boiler and coal bunker bulkheads and openings, deck house coaming angle and spar deck beams cut at edge of same.

Fig. 121 shows plan of steel top of deck house. One mold is made for half of the longest beam and the holes are so arranged that the one mold serves the purpose of marking all the beams on the top of house.

For the lengths of the beams a batten is used for the width of the house at every beam and the bracket mold is applied to same which gives the bevel of the beam end as well.

The top angle of the side plating has a universal pitch of rivets for the deck the rivets coming in line with the beam holes—inway of same. The same arrangement of rivet holes is made on the outside angle which is fastened on the edge of the plating projecting over the sides of the house.

In this case the centers of the holes are lined in on the top plating and the beam hole mold applied to same.

Measurements are given for the curve of the outside angles and as the rivet holes are universal very little trouble is experienced in laying out the deck plating with strips.

Fig. 122 shows the starboard side of the after deck house. One mold serves the purpose of marking all the holes

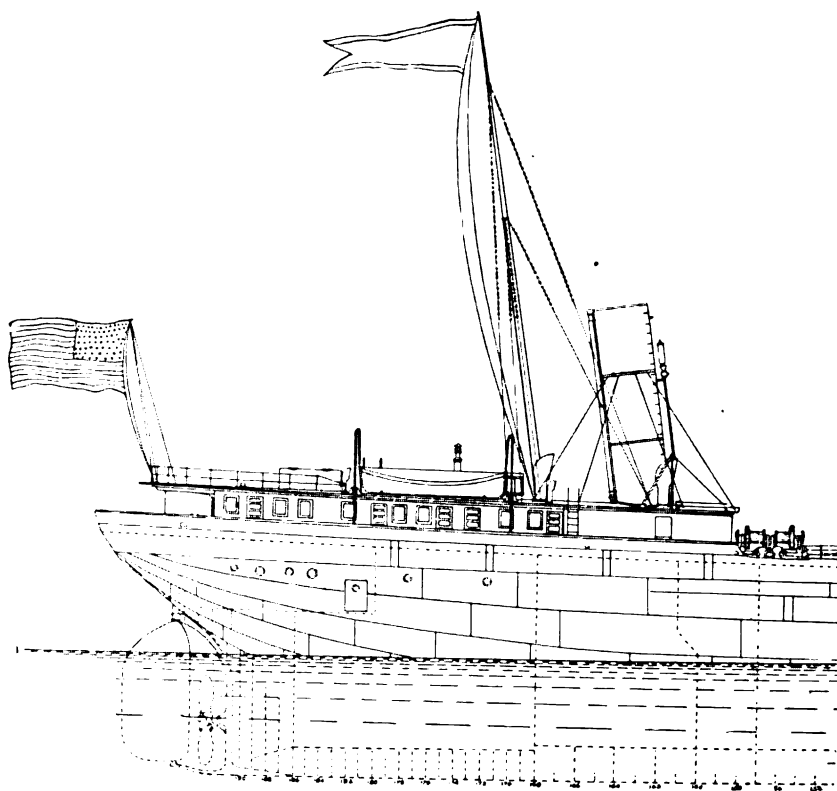
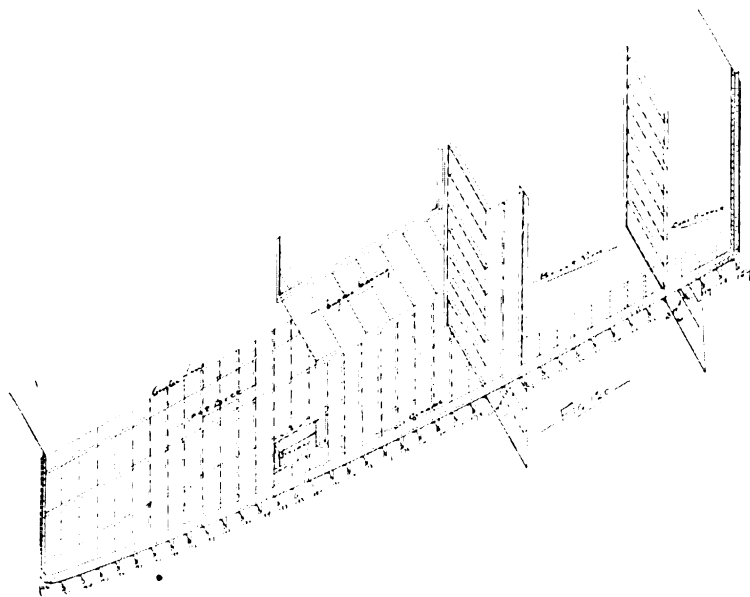
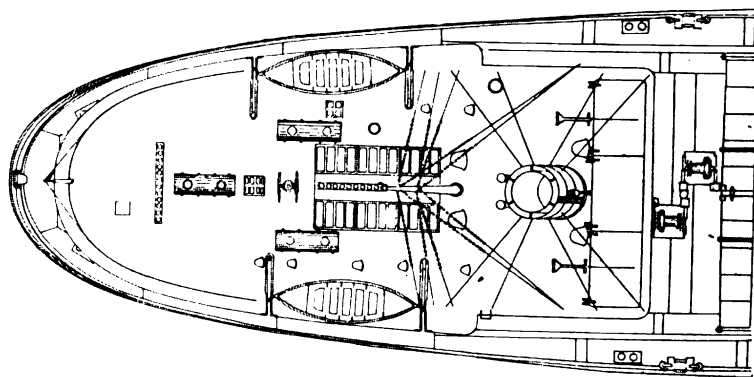


Fig. 119



for stiffness and the holes for the pilasters. The top and bottom angles having a uniform pitch of rivet holes

requires only two molds for marking the whole side of the plating. All that is required for marking the plates are

the widths and top and bottom bevels, one measurement being all that is necessary for whatever curve may be in the center of the plate.

One mold is all that is necessary for marking all the pilasters. The pilasters are usually left one-eighth of an inch long top and bottom and the flange of the angles chipped to remove the slightly beveled edge on the flange of the angle. Fig. 123, shows the port-side of the after deck house which is marked with the same molds used for the starboard side.

Fig. 124 shows the fore end of the after deck house which is treated similarly to the side plating. The butts are all perpendicular so that the bevel of the top and bottom are worked from same.

Fig. 125 shows the after end of the deck house which is treated similarly to the fore end, Fig. 124.

To get the proper shape of the deck house plating the heel of the coaming



angle is run in on the mold loft floor as shown by Fig. 120.

Fig. 126 shows the body plan with the other lines removed from where the heel of the coaming angle rests upon the beams, the deck house runs

#### ITEMS OF GENERAL INTEREST.

The fourth annual convention of the International Passenger Steamer Stewards will be held in Buffalo Feb. 5, 6 and 7.

The Lehigh Valley railroad will re-

of wheat at Fort William. The steamer will get 3 cents a bushel for winter storage.

Capt. Cyrus R. Sinclair has succeeded in taking the steamer Ireland from Bayfield to Duluth. Her forepeak and several tanks are full of water and she is now at the northwestern dock.

It is announced that plans for the construction of an immense steel floating dry dock are now being considered by the Empire Ship Building Co., of Buffalo to be located at the foot of West Genesee street.

Mr. James Whalen, who refused remuneration for sending his tug to the rescue of the ship wrecked crew of the steamer Goldspie, has been presented with a valuable diamond ring by the Northern Navigation Co.

The new 10,000-ton steamer building at the Cleveland yard of the American Ship Building Co. for Henry Steinbrenner, of Cleveland will be named in honor of Mack Andrews, of the firm of M. A. Hanna & Co., and will be launched next Saturday.

Capt. W. W. Smith, superintendent, and Mr. F. B. Smith, chief engineer of the Pittsburg Steamship Co.'s fleet, will, at the instigation of Mr. Harry Coulby, general manager, inspect the submarine signals on the Atlantic coast.

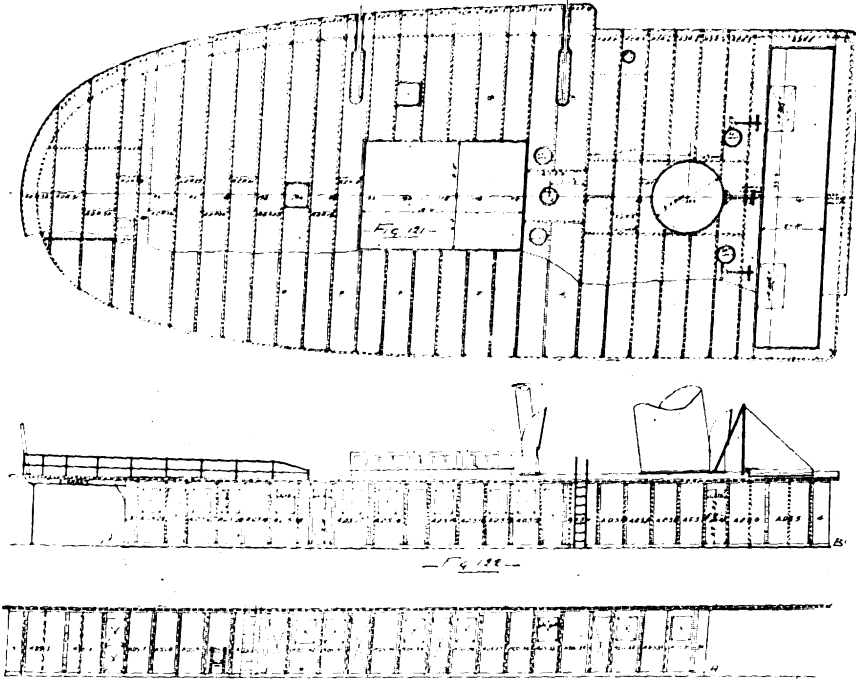


FIG. 123.

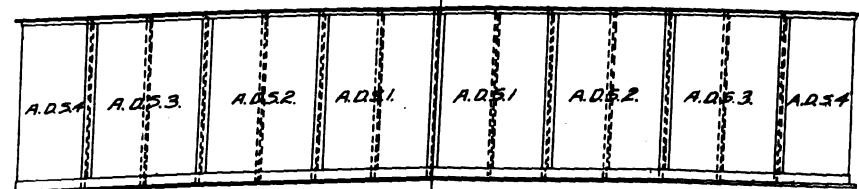
from No. 157 to 196 on the spar deck. The after end of the deck house takes the shape of the beam from the point where the beam is cut off as shown by No. 196.

It is the same at frame 157, the fore end of the house, the beam mold being used from side to side as shown by the ending of the line No. 157.

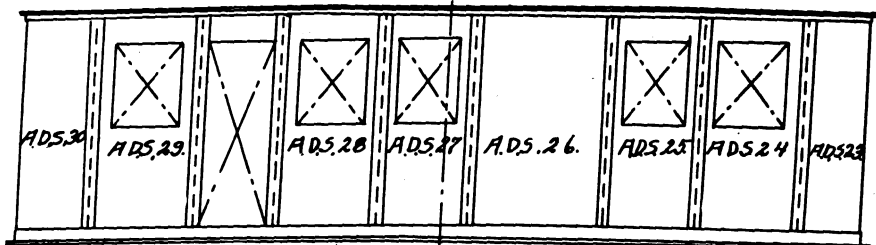
The line AB, Fig. 126, is a bevel line and from this line at right angles to same the heights 157 to 196 will determine the lines AB on Figs. 122 and 123, the sheer of the deck at the line of the deck house forming bottom of the side plating of the deck house.

Figs. 124 and 125 show the fore and after ends of the house, the bottoms of same are obtained from the beam mold. Fig. 124 is riveted to the spar deck beam 157 and Fig. 125 to beam 196. It is necessary to get the corners of the house, the line being the form of sheer and deck beam.

Washburn Bros., Thomaston, Me., built during the year a handsome schooner rig gasoline yacht for their own use. She is 71 ft. over all, 13½ ft. beam and 6 ft. 9 in. deep. Her deck-house is 41 ft. long, the woodwork being mahogany. The yacht is equipped with a Murray & Tregurtha four-cylinder engine, and is in every way a trim looking craft.

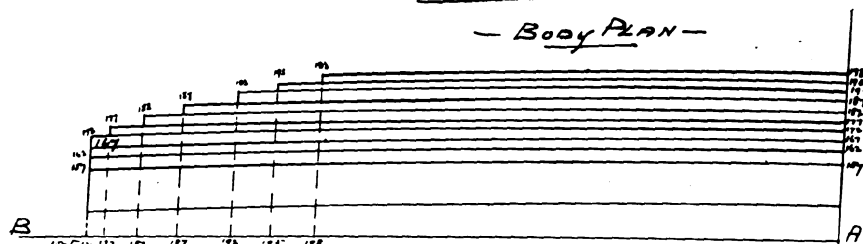


— Fig. 124 —



— Fig. 125 —

— Body Plan —



— Fig. 126 —

construct its docks at South Chicago of steel and cement with a storage capacity of 175,000 tons.

The steamer J. B. Wood of the Gilchrist fleet has taken on 325,000 bushels

The lightship Kewaunee, stationed on South East Shoal, Lake Erie, will be equipped with signals and the system is likely to meet with general adoption on the lakes.



ALL THAT IS LEFT OF HER—THE LAST PHASE OF THE MONARCH, WRECKED ON ISLE ROYALE.

### ORE ON LAKE ERIE DOCKS DEC. 1.

The figures compiled from the returns sent in by the various dock companies show that iron ore receipts at Lake Erie ports during the season of 1906 were 32,076,757 tons, out of a total movement of ore by lake of 37,513,595 tons. Lake Erie docks on Dec. 1 held a balance of 6,252,455 tons. During 1905 the total output by lake was 33,476,904 tons, of which Lake Erie docks received 28,941,259 tons and held a balance on Dec. 1, 1905, of 6,438,967 tons. During 1904 the total output by lake was 21,226,591 tons, of which Lake Erie docks received 17,932,814 tons and held a balance on Dec. 1 of 5,763,399 tons. The reserve of 6,252,455 tons on Lake Erie docks Dec. 1 is ample for winter consumption. Never in the history of the trade has 5,000,000 tons gone forward from dock to furnace during the winter season, and moreover, furnace stock piles are abundant.

Shipments to furnaces between May 1 and Dec. 1, 1906, aggregate 27,615,392 tons compared with 24,311,720 tons in 1905, compared with 16,658,806 in 1904, with 16,903,013 tons in 1903, with 18,423,364 tons in 1902, and with 14,204,596 tons in 1901.

The shipments to furnaces during the season of navigation as referred to are determined in this way: First we

have the amount of ore on Lake Erie docks before the opening of navigation, May 1 last, 1,791,090 tons; add to this the receipts of the season just closed, 32,076,757 tons, and the total is 33,867,847 tons; deduct the amount on dock Dec. 1, 6,252,455 tons, and we have 27,615,392 tons as the amount that was forwarded either direct or from dock to furnace yards. It is, of

other than Lake Erie ports, such as the furnaces at Detroit and South Chicago. The accompanying table shows receipts at Lake Erie ports and amounts on dock during six years past.

Abram Smith & Son, ship builders and repairers, Algonac, Mich., have used a reproduction of one of Knapp

#### IRON ORE RECEIPTS AT LAKE ERIE PORTS, GROSS TONS.

Ports	1906	1905	1904	1903	1902	1901
Toledo	1,423,741	1,006,855	508,793	652,305	1,037,571	798,298
Sandusky	35,847	51,202	48,356	130,532	165,556	33,017
Huron	778,453	825,278	231,364	486,106	520,646	431,311
Lorain	2,191,965	1,605,823	972,931	990,490	1,442,417	721,662
Cleveland	6,604,661	5,854,745	3,572,228	4,434,160	4,873,318	3,831,060
Fairport	1,861,498	2,008,621	1,157,858	1,434,342	1,538,744	1,181,776
Ashtabula	6,833,352	6,373,779	3,639,250	4,242,160	4,796,805	3,981,170
Conneaut	5,432,370	5,327,552	4,083,655	3,903,937	4,300,301	3,181,019
Erie	1,986,539	2,112,476	1,284,778	1,257,798	1,717,268	1,379,377
Buffalo & Tonawanda	4,928,331	3,774,928	2,433,601	2,194,901	2,256,798	1,475,386
Total	32,076,757	28,941,259	17,932,814	19,681,731	22,649,424	17,014,076

#### IRON ORE ON LAKE ERIE DOCKS, DEC. 1, GROSS TONS.

Ports	1906	1905	1904	1903	1902	1901
Toledo	281,000	368,024	318,573	106,710	310,023	254,196
Sandusky	17,467	52,977	75,134	95,275	95,175	47,384
Huron	245,499	208,023	182,495	253,249	232,767	231,501
Lorain	336,321	271,695	299,504	288,581	328,304	195,863
Cleveland	1,224,606	1,330,619	1,237,033	1,337,750	1,500,604	1,378,060
Fairport	590,783	759,961	660,420	845,946	924,236	710,590
Ashtabula	1,631,312	1,589,951	1,403,575	1,911,911	1,967,136	1,769,145
Conneaut	1,057,424	976,976	684,487	591,364	673,679	604,106
Erie	552,631	564,961	583,439	657,409	722,966	470,718
Buffalo	315,412	315,780	318,739	282,890	319,367	198,100
Total	6,252,455	6,438,967	5,763,399	6,371,085	7,074,254	5,859,663

course, understood that the difference between the total output of 37,513,595 tons, which was shipped from the Lake Superior mines during 1906, and the receipts of 32,076,757 tons at Lake Erie ports, is ore that went to places

& Bro.'s selected photographs of colored life of their annual calendar. This photograph represents the choir of a colored church practicing and is unusual for the excellence of its composition.

# SCIENTIFIC LAKE NAVIGATION

By Clarence E. Long

We have been steering north (correct magnetic) by compass, and so too, was ship's head really north; so now let us alter the course two points, not by compass, but by the ship's head itself, and steer NNW and see what the effect will be (see Fig. 2). In this position the north point of the compass will be to the right of the mass of iron, and as the magnetism in the after end of the iron is of an opposite kind, being blue or south, the influence is to draw the suspended needle to it. The result is a westerly deviation—one point according to Fig. 2. It is westerly because, the needle or card, is pulled to the left of where it ought to be. In this case the N-point of the card is where N by W ought to be and N by W where NNW ought to be, and so on. Of course if north is in the wrong place all the other points must be shifted round in the same manner, and instead of steering N by W as your compass informs you you are in reality steering NNW, or if you had been steering NNW by compass, you would, in reality, be steering NW by N. To make good a course of NNW, in this case, you would have to steer N by W by compass, or if you steered NNW by compass you would in reality be making good a NW by N course.

Thus we are made acquainted with the fact that the deviation, like the variation, when the card (needle) is pulled to the left of its proper place, it is called westerly deviation and must be allowed to the right of the course you wish to make good, and with easterly the card is pulled to the right and we allow it to the left, all of which is more fully explained farther on.

In Fig. 3 the vessel herself is heading correct magnetic east but the compass reads considerable to the south of east. In this case the attraction of the mass of iron being at right angles to the magnetic meridian, or at right angles to the direction of the compass needle's length were it not disturbed from this meridian; hence the magnetic disturbance is greater, and it may be said here, whenever the attraction is at right angles to the compass needle's length the deviation will be the greatest, and gradually diminishing as you steer or head on the courses that are more in line with this attraction; or it may be stated

thus, the greater the angle between the attracting force and the needle's length the greater the deviation, and the smaller the angle between the attracting force and the needle's length the greater the deviation, and the smaller the angle between the attracting force and the needle's length the smaller the deviation. The greatest angle that can be possible between the two is eight points or  $90^\circ$ , a right angle.

What we have already said can be easily proven, or tested, with a bar magnet and a suspended magnetic needle. First place the south end of the bar magnet in line with the north end of the needle, and you will readily see that the needle remains (after it has stopped vibrating and come to rest) in the same direction; but when the bar magnet is shifted from the line in the direction of the suspended needle to a position at right angles to it the greater the needle is pulled aside. Just try this and see for yourself.

Bear in mind that the compass card is supposed to remain stationary (its north and south points coinciding with the magnetic north and south points of the horizon) while the vessel revolves or turns beneath it. But this cannot be so where deviation exists, and where it is large in amount, for the card in some cases follows the boat as she swings round in a circle, and sometimes swings against the direction much faster than the boat is swinging in azimuth, it all depending upon the amount and kind of attraction and the position it is in with reference to the compass needle. The greater the attraction the more perceptible this will be. Where there is no deviation the card appears to move when the boat swings, but this is only apparent. In the case where the deviation is large we do not mean that the compass card turns with or against the boat as fast as the boat changes her course; but this again all depends on how far the boat has swung in azimuth, that is, the real change of the position of the vessel's head. There are cases where the boat's head could change two points in azimuth, that is, the real change in degrees (the arc of the circle swung) of the position of the vessel's head, and you would never know it by compass; thus the compass swings with the boat, that is, the influence of the attracting

forces being so powerful on the compass needle that it is held and not permitted to swing freely as it would if only affected by the earth's lines of force; then there are other cases where the vessel's head is changed in azimuth one point and the compass showing that she had gone two points. In a case of this kind it shows that the attracting force has changed polarity with reference to the compass needle, or that the angle of attraction is greater, being nearer to right angles to the compass needle.

In order to simplify matters it will be well for the student to imagine the card to be stationary and the vessel to turn beneath it; and then to imagine the card pulled to the right or left by the attracting forces of the ship.

Note.—When there is no deviation the compass card remains stationary. It appears to turn when the vessel's head swings, but this is only apparent. Hence these expressions: "The compass does not swing with the boat," meaning that the compass card does not move the same number of degrees or points as the vessel's head; or that they are not correspondingly the same. "The compass moves with the boat," meaning that when the vessel's head changes one point there is a corresponding change of one point by compass. When the compass card swings with the boat and revolves about the same as the boat's head it shows that there is little or no deviation, otherwise the card would not swing uniformly. When the compass card does not swing with the boat it shows that it is under the influencing effects of deviation. A little practice and experience will make this very plain to the student.

Now to resume with this example. See Fig. 3 and you will observe that the vessel has moved in azimuth (changed her heading) eight points from north, but her compass says that she has only moved six points—from north to ENE. This then is due to the magnetic forces drawing the compass needle the same direction that the boat turned in. In this case the card followed the boat two points in a turn of eight points. This ought to serve to clear away the haze and unravel the tangle of this seemingly "knotty" subject.

In the case of Fig. 3, although the vessel is heading ENE by compass she is really going east in direction.

The deviation is two points easterly; then to steer east you would have to steer ENE, two points to the left of E; easterly deviation you now allow to the left of the course you wish to make good. Do you see that the compass needle is deflected two points to the right of its proper place?

Remember that it is the compass card that moves (the attraction causing deviation moves it), and in order to get at the name of the deviation you must not move over the card in the direction that you know the card to have moved; (from the correct magnetic point to the compass point), if you do you will get the amount of the deviation but its name will be the wrong way, and your deviation will amount to double of what it really is. Mistakes frequently occur on this account, and this seems to be the great stumbling block for the majority of students studying this subject.

#### TO NAME THE DEVIATION.

Then to name the deviation (tell whether it is easterly or westerly, that is, whether the card is swung to the right or to the left) if you know what the correct magnetic course or bearing your vessel herself is heading in or on, the difference then of what you know this correct magnetic course or bearing to be, and what the compass in the vessel says at the time she heads on it, is the deviation. If the reading by compass is to the left of what you know the correct magnetic course or bearing to be, the deviation is named easterly, or what is the same thing. If the correct magnetic bearing is to the right of the course or bearing by compass, the deviation is easterly. If the compass course or bearing is to the right of the correct magnetic course or bearing, the deviation is westerly, or what is the same thing: If the correct magnetic course or bearing is to the left of the course or bearing by compass, the deviation is easterly. Thus, if you know the correct magnetic bearing to be east, and as the boat heads on it her compass says ESE, you know that it is two points westerly, because east is to the left of ESE that much. Now, to get the reason for this rule: Imagine your boat (not the compass, but the boat) to be heading east correct magnetic, as in the above example, and then imagine that you set the compass card and held it to east for a moment (both being alike), then to let go of the card; it will immediately start to swing (caused by the attraction in the boat producing deviation) and finally settles to rest heading ESE; which way has the card moved or swung; has it not moved to the

left? Now do you see what we mean by not moving on the card to get the direction of the deviation.

Remember that the card has already moved and that you should not do the moving, that is, in order to get the name or direction of the deviation.

Now, in the example of E and ESE the average student would be sure to call it easterly deviation instead of westerly deviation, for he is apt to reason it in this way: is not ESE to the right of E. So it is, but which way does the card have to swing in order for ESE to be where E is—to the left of course, hence the rule as above laid down.

#### HOW TO PROVE THEM.

In order to prove or verify, all such examples just illustrate them on the portable compass card, hence the above example would be explained thus: We must first make an explanation, the outer points of the portable compass, which represented the true points of the horizon in the lesson on variation, must now represent correct magnetic points of the horizon, and the inner compass, which represented the correct magnetic points (affected by variation only), must now represent the compass on board ship, affected by the attraction producing deviation. Now to go on with the above example: Make east on compass on board ship (the inner card) coincide with east on the outside compass; then as you look at them just imagine an attraction that would pull the card from its position of east to make it read ESE (and at the same time swing or move the inner card in the direction that it would have to move in order to come to ESE). Does not the compass card have to swing to the left? Here you have it in a nutshell. Any time that you are not sure of this seemingly troublesome subject just put it on the portable card, and you cannot help but be surprised at its simplicity. You will find that you can perform many operations on these two ordinary compass cards, if you know how to use them. Remember what has been said. All that you have to do in naming the deviation is to reason which way the card has been pulled and you have it; this is the secret if secret it be.

#### A PRACTICAL EXAMPLE.

Again, supposing that your boat was on with the Frying Pan and Pipe islands ranges (lighthouses in line) and which you know to be correct magnetic north; but your compass says N by W, which way is the card pulled, or which name does the deviation take? Is it not pulled to the right and therefore named easterly,

or is not north to the right of N by W; or how would the card have to move for N by W to be where north is; or according to the rule; if the correct magnetic bearing be to the right of the compass bearing it is named easterly.

To allow for this deviation in order to steer any desired correct magnetic course then it becomes necessary to move on the card from the correct magnetic point you wish to steer, or make good; but you must move in an opposite way to that of which the card is pulled.

#### THE COMPASS COURSE.

We are thus made acquainted with the following facts: The compass when affected by deviation is named the compass course or bearing to distinguish it from the true course or bearing and the correct magnetic course or bearing. Then the difference between the compass course or bearing and a correct magnetic course or bearing is the deviation; or a compass course or bearing is the true course or bearing affected by both variation and deviation, or the correct magnetic course or bearing affected by deviation only; or the compass course or bearing corrected for deviation, or the true course or bearing corrected for both variation and deviation, just as you please. For the present just consider that the compass course or bearing is the correct magnetic course or bearing affected by deviation or the attraction in the vessel that pulls the compass needle aside from its correct magnetic direction.

#### EASTERLY AND WESTERLY DEVIATION.

Then to name the deviation: it is easterly when the correct magnetic course or bearing is to the right of the compass course or bearing (i. e., just as the compass reads on board); and westerly when the correct magnetic course or bearing is to the left of the compass course or bearing. Learn to memorize these rules. First clearly understand the manner in which the card is pulled or swung by the attraction, and the reason for the deviation being named either easterly or westerly. When you know this the rules will suggest themselves. The rules are easily learned and much more easily forgotten and mixed up with other rules, but when you once know the reason and principles for it you can never forget them or mix them up with something else.

#### THE SHIP'S MAGNETISM.

Now to get back on Diagram 3 again. If you alter your course again, the amount of the deviation will change, and if you turn your vessel clear around, the deviation will be in



the opposite direction, that is, if it had been easterly it will not be westerly and vice versa. Now when the whole ship is built of iron or steel she is one huge magnet [so is a wooden boat when iron enters into her construction] having the same properties as the ordinary bar magnet—two poles and a neutral line, or equator. It is one of the curious facts of magnetism that a vessel built with her keel lying north and south will have a magnetic force running from bow to stern, or vice versa; whereas one built with her keel east and west will have her magnetism running athwartships, just as a piece of hard iron acquires polarity from the earth's magnetism after having been in the magnetic meridian for a certain length of time. Now you can readily and easily see that in the case of the first vessel there will be little or no deviation caused by her magnetism when she is sailing correct magnetic north and south, and a good deal when she is heading east or west correct magnetic, the attraction being at right angles to the needle's length. In the case of the second ship there will be little or no deviation when she heads east and west and a great deal when she heads north and south, because the needle's length is again at right angles to the ship's magnetism. As the compass card is not supposed to turn with the ship when her course is altered, it follows that the mass of metal within the vessel as well as the magnetism of the hull assumes new relations to the needle of the compass, and that, as a result, the deviation must change whenever the course is changed. This is what makes the problems arising from deviation extremely troublesome, and it makes it necessary to ascertain the amount of the deviation on each course. Do not get the impression, as many do, that it is always on east and west courses where the deviation is greatest and on north and south courses the least. This can only occur under certain conditions, which conditions we have just pointed out.

#### A FEW DEFINITIONS OF DEVIATION.

*Deviation.*—That portion of the correction of the compass called deviation is caused by the attraction of the iron of the ship. It is named easterly or westerly according as the north end of the needle is drawn to the right or left of the correct magnetic north.

*Deviation of the Compass* is the term used exclusively to denote the correction of the compass, due to the attraction of the iron of the ship herself, and in her equipment, such as the boiler, engine, funnels, etc. It is en-

tirely independent of the variation, being produced by objects within the ship.

Deviation is what the north and south points of the compass lack of pointing to the correct magnetic north and south, and is caused by magnetism in the iron and steel of the ship herself, her equipment, etc. The amount and name of the deviation varies on different headings of the vessel, being due to the magnetic forces changing their lines of direction relative to the compass needle.

If the magnetism in the vessel draws the north point of the compass to the right of correct magnetic north and south the deviation is named easterly (the same as naming variation, only the variation is measured from the true meridian and deviation is measured from the magnetic meridian) and if the vessel's magnetism draws the north and south points of the compass to the left of the correct magnetic north and south the deviation is named westerly. This follows then that with easterly deviation the correct magnetic points are to the left of the points as shown by compass, and with westerly deviation to the right of the compass points. It also follows that to make good any desired correct magnetic course with easterly deviation it is necessary to allow it to the left of the correct magnetic course to obtain the course to be steered by compass, called the compass course, and the reverse with westerly deviation.

#### THE ADVANTAGE OF KNOWING THE LAWS OF MAGNETISM.

One of the most practical, as also one of the most useful purposes to which the laws of magnetism, explained in a preceding chapter, can be applied, is to find the effects of the iron used in the construction of vessels on the compasses placed in them; and the student who thoroughly understands these laws and principles can have no difficulty in deducing the results which follow.

As has already been said it is one of the curious facts of magnetism that a vessel built with her head lying north and south magnetic will have a magnetic force running from bow to stern, or vice versa. A good deal like and on the same principle that a piece of hard iron becomes magnetic through the earth's inductive force if held in such a position that this force can take action. A piece of soft iron will do the same thing, but it is only temporary, its magnetism being transient. It takes the hard iron a longer time to acquire its magnetism, but once begotten it retains it permanent-

ly, and unlike the soft iron, makes no difference in which direction it is held. A steel boat is very much the same as this piece of hard iron. Bear this in mind. The piece of hard iron if held in the earth's total line of force and subject to mechanical concussion, hammering for instance, for the same reason that a good deal of the ship's magnetism is acquired by the hammering necessary in her construction, it will only be a short time before it has received magnetism by induction and will become permanent in amount, provided the iron is of a good quality and highly tempered.

#### HOW THE HULL BECOMES MAGNETIZED.

We have learned that the earth's inductive force which imparts magnetism to pieces and masses of iron and steel is increased by mechanical concussion, such as hammering for instance.

Just so with an iron or steel vessel, intense magnetism is developed by the bending, twisting and hammering to which the iron is subjected; N (red) magnetism being developed in the part of a vessel which is below and towards the north; and south (blue) magnetism which is above and towards the south, and so far as the hull is concerned it is of that kind which is called sub-permanent because it has not the precise consistency of a steel bar magnet. After a new iron or steel ship, and a wooden one for that matter where iron enters largely in the construction, has been launched it has been found that the magnetism induced in the hull while building rapidly diminishes, but by no means departs entirely, and that which remains is called sub-permanent magnetism, that is, after the magnetism has settled down to saturation point; thus we see that there exists a great similarity between the ship magnetism, taken as a whole, and the magnetism of the ordinary bar magnet. It is another curious fact of magnetism that the materials of which a vessel is built are not such as by themselves retain magnetism permanently, it is found that, when united in the form of a ship, and subjected to percussion by riveting, hammering, etc., they acquire this property in a greater or less degree. The ship, herself, then, may be looked upon as a large permanent magnet.

#### WHAT SUB-PERMANENT MAGNETISM IS.

It must be here understood that the sub-permanent magnetism of the ship is confined to the hull, and not to the equipment of the ship, which portion of the ship's magnetism plays another important part as will be presently seen. Then the sub-permanent part of the ship's magnetism we might say,

is her general magnetic character, which so to speak was born with the ship, and that portion due the individual masses of vertical and horizontal iron is called induced magnetism. The sub-permanent magnetism is so-called in order to distinguish it from the permanent magnetism of steel magnets.

#### DEVIATION FROM INDUCED MAGNETISM.

The general magnetism (sub-permanent) of the ship after becoming stable in amount remains so, and the color of its poles is not subject to change no matter which geographical direction and position the vessel may be in; but not so with the ship's induced magnetism, which is due to detached pieces of iron in a ship, such as iron (or steel) masts, funnels, cylinders, and other masses of vertical iron, and are therefore independent magnets; it is of a transient kind, and the color of its poles depends upon the magnetic latitude the ship may be in at the moment; and in the case of horizontal iron, upon the direction of the ship's head.

#### IT DOES NOT RETAIN IT ALL.

When a bar magnet is first magnetized it will take a good deal more magnetism than it can possibly retain, and for several months afterwards gradually loses its strength until it settles down to a definite state known as saturation point, and accordingly is styled a permanent magnet. In this respect the ship and magnet are very much the same.

Thus, to simplify matters let the ship's magnetism represent the magnetism of an ordinary bar magnet, and do not let other complications bother your head for the present. So far, the ship's magnetism, taken as a whole, and the magnetism of the bar magnet, are similar and for all intent and purposes may be so regarded by the student as having the same laws and principles.

#### WHERE THE DEVIATION IS SYMMETRICAL.

In nine cases out of every ten in vessels where the iron or steel is symmetrically placed, that is, as much attraction on one side of the compass as there is repulsion on the other, as well as from the bow to stern, the natural deviations\* will be opposite in name and direction on reverse points of the compass, and practically of the same amount. For instance, if the deviation is easterly on north, say

\*The natural deviation is the attraction or repulsion of the ship's compass needle before the compass is adjusted or compensated, that is, just as the combined magnetism of the ship affects the compass, and no attempt made to counteract it. The deviation existing after the compass has been properly adjusted is called residual error (that which is left) being due to the unequal effects of the attraction and repulsion. This is fully explained under compass adjusting.

one point, it will be westerly on south about the same amount; or if it had been westerly on north it will be easterly on south, and so on round the compass.

It must be borne in mind, however, that the magnetism of Figs. 1, 2 and 3. represent but a particular case; for the iron of a ship may be, and in all iron ships is, differently disposed; but the diagrams will illustrate the manner in which the deviation forms.

#### QUESTIONS FOR WHEELSMEN AND WATCHMEN.—NO. 25.

261. What marks can you use for a turning point at Pt. au Frenes bound down?

262. How would you navigate a boat from abreast of Lime island dock to abreast of Sweets Pt. crib?

263. How would you navigate a boat from Sweet's Pt. crib until you had Frying Pan island and Pipe island ranges over your stern?

264. Give correct magnetic course and distance from abreast of Pt. Iroquois lighthouse to a point one mile north of White Fish point lighthouse?

265. Give true course and distance from a point one mile north of White Fish Point lighthouse to a point four miles north of Copper Harbor lighthouse.

266. Give correct magnetic course and distance from a point four miles north of Copper Harbor lighthouse to a point four miles north of Eagle Harbor lighthouse?

267. Give correct magnetic course and distance from a point four miles north of Eagle Harbor lighthouse to a point one mile N x W  $\frac{1}{2}$  W from Devil island lighthouse?

268. Give correct magnetic course and distance from a point one mile N x W  $\frac{1}{2}$  W from Devil island lighthouse to Duluth harbor entrance?

269. Give correct magnetic course and distance from a point one mile north of White Fish Pt. lighthouse to a point four miles north of Big Pt. Sable lighthouse.

270. Give correct magnetic course and distance from a point four miles north of Big Pt. Sable lighthouse to Marquette harbor entrance.

#### QUESTIONS FOR OILERS AND WATERTENDERS.—NO. 21.

200. Would there be any difference in the actual reading of the steam gauge and the boiler pressure should the gauge be placed 15 ft. below the water line in the boiler if so, how much?

201. At what temperature does

water occupy the least amount of space, yet weigh the most, per cubic ft.?

202. How would you proceed to line up a pair of links and connections to prove they were parallel?

203. How would you find the proper length of a valve stem?

204. How would you get the exact length of a piston rod?

205. How would you proceed to convince yourself a steam reverse engine, countershaft, etc., were in their exact position?

206. In boring out a pair of crank pin shells would you bore them the exact size of pin?

207. What size would you suggest a pair of crosshead brasses to be bored for a 6-in. pin?

208. How would you lay up a compound duplex feed pump for the winter?

209. What is the quickest and safest way of laying up the forward line for winter?

#### QUESTIONS FOR MASTERS AND MATES.—NO. 25.

370. The correct magnetic course is NE and the compass course is NE by E  $\frac{1}{2}$  E, how much and which way is the deviation?

371. What is the difference between a correct magnetic course and a compass course?

372. The correct magnetic bearing of a range is SSE, when on with this range your steering compass reads S  $\frac{1}{2}$  E, how much and which way is the deviation?

373. The deviation on N by E  $\frac{1}{4}$  E correct magnetic is 6 degrees Wly., what compass course would you steer from Chicago to Pt. Betsey by such compass?

374. The true bearing of the sun is SSW, the Var. is  $\frac{1}{4}$ -pt. Ely. and the bearing of the sun by compass is SW  $\frac{1}{8}$  S, how much and which way is the deviation?

375. Your steering compass has a deviation of 5 degrees Ely. on a correct magnetic course of SW by W, how would you steer with this compass from Devil's island to Duluth?

376. If the correct magnetic course is to the right of the compass course what name does the deviation take?

377. If the compass bearing is to the right of the correct magnetic bearing what name does the deviation take?

378. On the course from Eagle Harbor to Ashland via South passage, your steering compass says W by S  $\frac{1}{2}$  S, and a good course is made of it, how much and which way is the deviation of this

compass on this particular course?

379. What is meant by local attraction?

380. The deviation on correct magnetic ENE is 10 degrees Wly. and on NE by E 8 degrees Wly, the ship having this compass steers a compass course of NE by ENE, the mean Var. being 3 degrees Ely, what is the true course made good?

381. Having found the deviation for the various points of your compass how do you know when it is easterly and how do you know when it is westerly?

382. Does the ship's head move the same in reality as that shown by a compass on board having considerable deviation?

383. How is it possible for a ship's head to move more or less than what the compass shows the vessel's head to have turned in azimuth?

384. Why is the deviation different for the ship's head in different directions?

#### REPAIRS TO VESSELS.

The Niagara Navigation Co., Toronto, Ont., will put in a new condenser in the steamer Chippewa.

Isaac Stephenson, Marinette, Wis., will make repairs to the hull of the steam yacht Bonita this winter.

Capt. John C. Pringle, St. Clair, Mich., will enlarge the hatches of the steamer Isabella J. Boyce this winter.

The Warde Transportation Co., Chicago, Ill., will put new top rails on steamer Niko and a new stern bearing this winter.

Ashley & Dustin, Detroit, Mich., will put new bulwarks on the steamer Frank E. Kirby and new flues in the boilers.

The Rideau Lakes Navigation Co., Kingston, Ont., will give a general overhauling to the Rideau Queen and Rideau King.

The Grace Harbor Lumber Co., Detroit, Mich., will make general repairs to the steamer Tempest and will put a new deck forward on the barge C. G. King.

J. U. Karr, of Cleveland, O., will repair the crew's quarters and deck aft of the schooner Donaldson and will install a new 20 H. P. boiler and fire deck pump.

The schooner Fanny Neil will have new rails and new stringers, some new calking and new decking abreast of cabin. Both schooners will be painted in the spring.

The Cleveland & Buffalo Transit Co. will give the City of Erie and City

of Buffalo a general overhauling of hull, cabins and state rooms. Both ships will be painted throughout.

The Ionia Transportation Co., Detroit, Mich., will renew part of the throat sheets of both furnaces of the steamer Ionia and thoroughly clean the interior of shell.

F. W. Gilchrist, Alpena, Mich., will make repairs to the hull of the steamer F. C. Hall, to the boilers of the tug John Owen and to the hull of the steamer Sam Flint and schooner Kingston.

The Wallace & Cunningham Transit Co., Dearborn, Mich., will make general repairs to the steamer W. B. Morley. New planking also will be placed forward and some new floor in the hold.

The steamer Annie Laurie, owned by C. McG. Koch, Sandusky, O., will have new deck beams and new upper works aft, together with some new planking and the entire hull will be re-calced.

The steamer C. H. Starke, owned by Paul H. Hoeft, Roger City, Mich., is now laid up at Detroit and will have new bulwarks, new stringers, new calkings, new rails, new deck and some new deck beams.

The Ann Arbor railroad will rebuild the hull of the Ann Arbor No. 1 next summer. The sister ship No. 2 was rebuilt during the past summer at a cost of \$65,000 and the company contemplates similar repairs to No. 1.

The Hope Transit Co., Detroit, Mich., will make slight repairs to the bulwarks of the steamer W. R. Stafford. The valve stems will be trued up and brass bushings where required and new fire box in boiler and throat sheets.

The steamer Traverse, owned by Stephen Jones, will be given a general overhauling this winter. General repairs will be made to the steamers Cherokee and schooners Chippewa owned by W. S. Brainard, of Toledo. Both vessels are at Toledo.

The Detroit River Transit Co., Detroit, Mich., will rebuild the steamer Desmond above the water line and install a new system of boiler heating. The company expects to have the largest and best wooden sand sucker on the lakes.

The Tonawanda Iron & Steel Co., No. Tonawanda, N. Y., is giving its fleet a thorough overhauling this winter. The boiler has been taken out of the steamer Veronica and the boiler from the steamer Lewiston installed in its place. New decks will be placed in

the steamers C. F. Curtis, N. C. Holland and T. S. Fassett.

The fleet of the Detroit & Cleveland Navigation Co. and the Detroit & Buffalo Steamboat Co., will have a general overhauling with new interior decorations. The steamer Samuel Marshall, owned by the Central Canada Coal Co., Ltd., Brockville, Ont., now laid up at Detroit will have a new deck and enlarged hatches and new steam steerer will be installed and repairs made to engines and boiler.

The Leatham & Smith Towing & Wrecking Co., Sturgeon Bay, Wis., has changed the name of the tug A. J. Wright to Smith. During the winter this company will raise the deck 12 in. and put in new beams, deck and cabin and will also install a fire pump. The engine will be changed from 26 and 30 to fore and aft compound 18 and 54 by 45 in. with independent air pump and condenser. Repairs will also be made to the deck of the tug Leatham.

Slight repairs will be made to the upper works of the steamer Allegheny of Allegheny Transportation Co.'s fleet. E. T. Carrington, Bay City, Mich., to repair damages sustained in collision on Lake Superior Oct. 27. General repairs will be made to the steamer Seguin, owned by J. B. Miller, Toronto, Ont., necessitated by collision with the steamer Sir Louthian Bell.

The Richelieu & Ontario Navigation Co., Montreal, will make extensive repairs to its fleet. The steamer Quebec will be stripped entirely and lengthened 20 ft. The steamer Montreal will have a new shaft. The steamer Toronto extensive repairs to her engines. The steamer Beaupre repairs to guard and cabins and the steamer La Prairie will be remodeled. The rest of the fleet will undergo the usual renovation.

The Indiana Transportation Co., Michigan City, Ind., has purchased the steamer Soo City from A. Booth & Co., and will use her as an auxiliary steamer during the coming season between Michigan City and Chicago. The steamer which is now laid up at Duluth will be thoroughly overhauled and rebuilt.

The Canadian steamer Winona which was wrecked on Big Duck Island, has been abandoned to the underwriters as a constructive total loss. The Winona which was owned by R. O. and A. B. McKay, of Toronto, went ashore late in the fall with a cargo of cement. She was released by the wrecker Favorite and taken to Collingwood.

### McARTHUR PORTABLE FIRE ESCAPE.

McArthur's portable fire escape and Jacob's ladder is a device which is bound to be adopted by the steamship



FIG. 1.—THE BRONZE HOOK

lines, owing to its extraordinary adaptability for various uses aboard ship. It is light and strong and will not

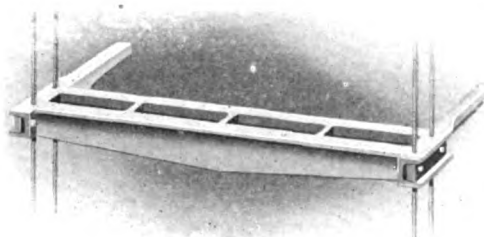


FIG. 2.—THE ALUMINUM STEP.

swing, corrode or tangle, while at the same time it can be easily rolled up and stowed away when not needed. This ladder has been on the market only a short time, but it has already been installed on some of the lake

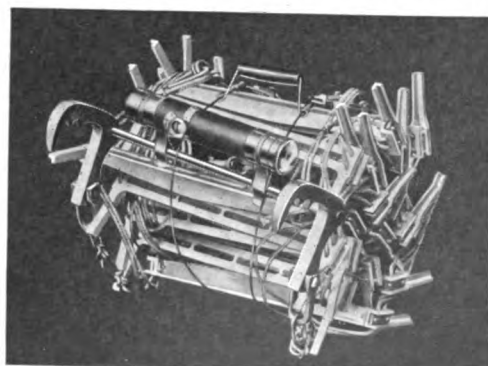


FIG. 3.—READY FOR STORAGE.

freighters. Capt. Alexander J. McKay, master of the steamer City of Detroit, thinks it one of the best appurtenances for the purpose designed that he ever

saw. A similar endorsement has been made by Capt. M. Anderson, of the steamer L. C. Hanna, while Capt. Wm. Langell, now of the barge Alexander Maitland, related that upon one occasion when he was in charge of the L. C. Hanna in assisting the barge Algeria he was enabled to rescue from some wreckage, Tom Sullivan, a member of the Algeria's crew, who otherwise would have been drowned. The illustrations accompanying this article give one a very good idea of the ladder. Fig. 1 shows the bronze hook which is usually in conjunction with the employment of the ladder on steamers. Fig. 2 shows the step, made of an alloy of aluminum with a flat surface supported by two vertical flanges with cross braces uniting the flanges. This vertical construction has unusual rigidity, and while weighing only seven ounces, is capable of sustaining the weight of one ton. The prongs at both ends of the step come in contact with the side of the ship

when the ladder is in use and afford ample footing for the person using the ladder. Fig. 3 shows the ladder rolled up ready for use or for storing. Fig. 3 also shows a little storage battery lamp supplied with the ladder. The purpose of this is to have light on hand should anything happen to the running lights of the ship when the ladder is needed.

The galvanized wire steel cables of the ladder, while pliable have unusual tensile strength and will safely bear the weight of two tons. The ladder is manufactured by the McArthur Portable Fire Escape Co., of Cleveland, O.

### ROBERTS SAFETY WATER TUBE BOILERS.

Following is a list of boilers which are in course of shipment and construction at the works of the Roberts Safety Water-Tube Boiler Co., at Red Bank, N. J.: Four special size boilers for the 60-ft. launches for the war department being built by Electric Launch Co.; one boiler for Mr. T. P. Davis, Rio Vista, Va.; one boiler for Mr. J. H. Wells, Poquonoc Bridge, Conn.; one boiler for Mr. J. T. DeBerry, 232 West 135th street, New York city; two special boilers for Commodore E. C. Benedict's yacht Oneida; one boiler for Mr. W. W.

Scofield, Stamford, Conn.; one boiler for W. A. Boole & Son Co., Oakland, Cal.; one boiler for Mr. W. D. Hayes, Westport, N. Y.; one boiler for Mr. Robert Jacobs for new high-speed steam yacht he is building from designs by Messrs. Swasey, Raymond & Page; one boiler for Morse Iron Works, Brooklyn, N. Y.; two boilers for Mr. A. J. McIntosh to replace water-tube boilers of another type; one for Adam Hoch Leather Co., Eatontown, N. J.; four boilers for the Puget Sound Day Line, of Seattle, Wash.; one for Leland Stanford Jr., University, Cal.; one for steamer Morris Block, owned by Capt. B. D. Wolff, of Kingston, N. Y.; one for George Lawley & Son Corporation, for the steamer Helena; two for Mr. Leonard Richards, owner of the steam yacht Carola.

### THE WELIN QUADRANT DAVIT.

While the science of ships' design and construction, with their appurtenances and equipment, has been remarkably developed and perfected in the last quarter of a century, the matter of boat davits connected with life-saving has remained almost stationary, and the same type are practically in use now that were a century ago. At last this vital problem, namely the rapid and safe launching of life-boats in all kinds of weather has been successfully solved by Axel Welin. This device has in the last two or three years not only been patented in all countries of the world, but also the merits of the invention have already passed the crucial test. It has won the approval of the most distinguished naval architects and engineers, and is today being applied by several governments and the merchant marine as rapidly as they can be manufactured.

The advantages of these davits are many: It is always ready for instantaneous use; no special training called for on part of the crew; it is proof against corrosion; it will swing the boat out in 20 to 45 seconds, regardless of any reasonable list the ship may have; no stays whatever are required; can be run out to, and stopped at any desired point in their travel.

They will handle with ease and great rapidity the largest life-boats (including steam launches) and require only two men for their manipulation. The boat may be manned before the chocks are released. Their introduction renders possible the economizing of valuable deck space,

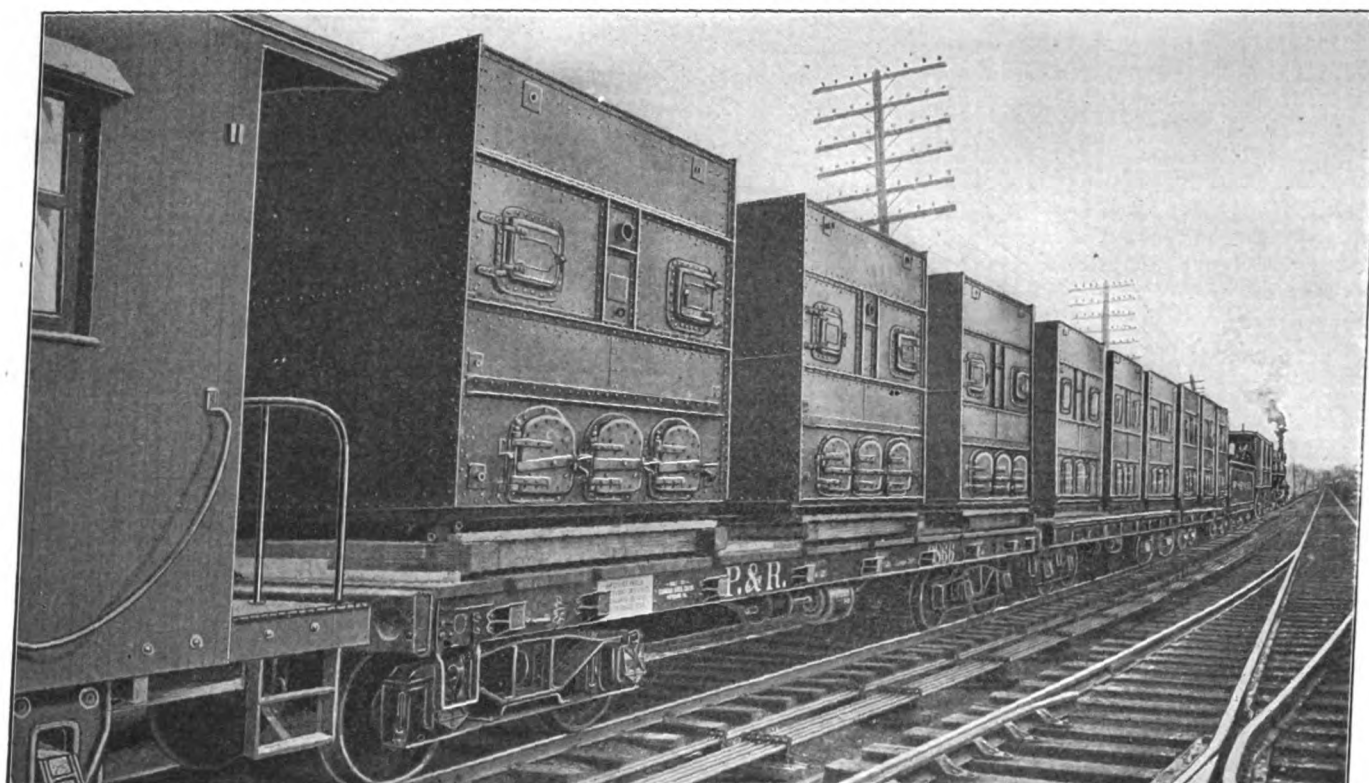


in several directions. Their weight is considerably below that of the ordinary davits and they are less liable to freeze.

Twelve of these davits have just been installed on the Goodrich liner Alabama. The officers of the Welin

Squires system of feed water control. For marine service, this consists of equipping each boiler with a feed water controller and the feed pumps with the "excess" pump governor. The former is intended to keep the boiler level within  $\frac{1}{4}$  of an inch of the determined point,

This is accomplished by the Squires "Excess" pump governor which throttles the steam supply on the feed pump, when the excess on the discharge rises above the desired point. The "Excess" governor is of the pilot and diaphragm type. The boiler and pump discharge pressure



SHOWING A 9,000 H. P. SHIPMENT OF ROBERTS BOILERS, THE LARGEST INSTALLATION OF SCREWED JOINT BOILERS IN THE WORLD.

Quadrant Davit Co., A. P. Lundin, manager, are in the Whitehall building, 17 Battery Place, New York.

#### BOILER FEED CONTROLLERS ON SHIPBOARD.

In the year 1900 the Pittsburg Steamship Co. decided to equip its boats with water-tube boilers, an innovation which produced unexpected difficulties. Up to that time the Scotch (fire tube) type of boiler had been used and it was an easy matter to maintain an even water level. But the comparatively small amount of water per square foot of heating surface in the water tube boilers changed the conditions. In spite of careful feeding, the level would vary between wider limits, and when the ship rolled in stormy weather, the water tender was frequently puzzled in locating the true level. It was often necessary to inject a large mass of cold feed water at one time, which troubled the fireman in keeping up the pressure, and did the boilers no good.

The chief engineer, Mr. F. B. Smith, determined to try some automatic method of control and as an experiment one of the boats was equipped with the

and the latter to keep the pressure on the feed line a fixed excess usually about 10 pounds above boiler pressure.

The controller accomplishes its purpose by keeping the valve on the feed line open just enough to let in as much water as is being evaporated. It depends for operation on the expansion of a copper harp, placed at the water line, which fills with steam as the level falls. When sufficient steam collects to cause a lateral expansion of 1-64 inch in the harp, a pilot valve opens, releasing the pressure on the diaphragm of the valve on the feed line. The pressure from the feed pump line then forces water into the boiler until, as the level rises, the steam in the harp is partially displaced by water, which cooling off, makes the harp contract and close the pilot. Pressure then builds up on the diaphragm of the feed valve and closes it. For clearance this process has been described as intermittent, but in practice it is found that pilot and feed valve are slightly open all the time giving a steady feed just as the water is evaporated.

The pressure on the feed line rises and falls with the boiler pressure and is always a fixed number of pounds higher.

acting through an equalizing bar against a spring which operates the pilot.

The fixed excess is a great advantage in marine service. If 250 lbs. steam is maintained while cruising, and the governor set for 10 lbs. excess, there will be 260 lbs. pressure on the feed line, and while at the dock where only 50 lbs. of steam is carried, there will be only 60 lbs. pressure on the feed line.

The governors used in stationary plants usually maintain a fixed pressure without regard to variations of steam pressure and for this reason the "Excess" governor has met favor wherever there is great change in boiler pressure.

This system of control proved so satisfactory that the seven ships, Malietoa, Maunaloa, Cornell, Harvard, Princeton, Lafayette and Rensselaer were immediately equipped with the same apparatus. Not only were the former troubles avoided, but the steady feed of the controllers was found to increase the efficiency and life of the boilers and pumps.

The water tenders have most of their time for firing, and the controllers also effect a saving of fuel. This is more important on water than in stationary plants, since with lower fuel consump-

tion, a ship makes a longer voyage with one coaling.

After five years of service the governors and controllers are still as good as ever. They have maintained the level in the strongest weather when the pitching of the ship would make accurate hand feeding impossible.

This spring where two new ships, the Queen City and the Crescent City, were put into service, each was equipped with two 1,200 H. P. Babcock & Wilcox boilers which carry 250 lbs. pressure. The controllers have never failed to hold the level, and all of the engineers are pleased with their operation. It is therefore quite apparent that automatic feed water control should insure the greatest accuracy on stationary boilers, when the conditions are not nearly so severe. The Squires controller and other ingenious steam specialties are sold by the Strong, Carlisle & Hammond Co., of Cleveland, O.

#### GREAT LAKES GOSSIP.

The Dredge & Dock Owners Association met at Chicago Jan. 8.

John A. Weisbeck, marine surveyor of Buffalo, was in Cleveland last week.

The steamer L. C. Waldo which went aground at South Chicago will be repaired at South Chicago.

The car ferry Manistique was forty-two hours recently in releasing the steamer Binghamton from Skillagalee Point.

The steamer Sachem and barge George B. Owen have been sold by Mitchell & Rowland, of Toledo, to E. J. Fisher, of Cleveland.

Capt. Wm. McPherson and his wife will keep ship on the steamer Wm. S. Mack this winter. Capt. McPherson laid up the P. P. Pratt at Cleveland.

Capt. James Murphy, master of the steamer Martin Mullen, laid his boat up at Buffalo and returned to his home on the St. Clair river in time for Christmas.

Capt. H. G. Haybarger, of the steamer W. G. Pollock, was home for Christmas, but went back to his boat at Manitowoc later, where she is being laid up.

J. O. Gallagher, who was second mate on the steamer Geo. Stephenson this season, is looking after three of the Pittsburgh Steamship Co.'s boats at Toledo.

Mr. E. H. Burrill and wife of Ashtabula Harbor, visited Cleveland for a few days last week. Mr. Burrill is one of the leading meat and ice dealers at the harbor.

Car ferry Pere Marquette No. 6 sank in the river at Manistee in 12 ft. of water. The cause is unknown, but it is presumed that workmen left the seacock open.

J. W. Watrous, district manager for the Aetna Life & Accident Insurance Co., who keeps in touch with the rank

and file of sailors, was in Cleveland last Saturday.

Capt. James Doner, of the steamer Livingstone, who laid her up in the old river bed, finished his work last week and has returned to his home in Detroit.

The passenger steamer Lakeside, bound from the island to Sandusky, went on the rocks at Cedar Point during a heavy fog last week, but was not appreciably injured.

Milton M. Hutton, one of the rising young sailors from Malden, who has been mate on the barge Geo. E. Hartnell the past season, expects to leave for his home this week.

James H. Robertson, who put in nearly a whole season as steward of the steamer G. Watson French, is figuring on living in Cleveland this winter as soon as the boat is laid up at Buffalo.

Capt. W. A. McLeod, of the steamer James H. Hoyt, has ambitions to become a mine owner and he will hike to the Cobalt district after the first of the year. He is now visiting in Cleveland.

Capt. Joseph Yax, who laid up the steamer Chisholm at Detroit, is residing in Cleveland this winter. He is nursing a badly injured ankle. He hurt it in walking back aft on Lake Superior during some heavy weather.

Capt. Fred C. Watson, master of the Queen City, lies ill at his Cleveland home with a severe attack of pneumonia. He was unable to attend the meeting of the Pittsburgh Steamship Co.'s captains for this reason.

Capt. Alex C. Callom, master of the steamer William E. Fitzgerald, laid up his boat at Cleveland and left for his home at Amherstburg, Ont., the day before Christmas. He is expecting to return later in the spring, probably, in February.

Capt. Fabian Cody, one of the most popular skippers on the lakes, finished his first season as master of the steamer Zimmerman badly crippled with rheumatism. He will go to Mt. Clemens to take the baths there in an effort to recover from it.

Capt. Walter J. Girardin, master of the barge George E. Hartnell, expects to bring his wife to Cleveland this winter and keep ship on his boat. There will be considerable repair work done on her, and he will look after it. She is laid up in the old river bed.

The steamer which is building at the Superior yard of the American Ship Building Co. for the Acme Steamship Co. will be delivered in April and will be named Ward Ames, in honor of the senior member of the Ames-Brooks Co., Duluth.

The car ferry Ashtabula stranded

on the north shore of Lake Erie next Port Burwell last week, missing the entrance to the harbor in a fog. The tugs Frank W. and Prodigy were sent from Cleveland to the car ferry and succeeded in releasing her without damage.

Capt. Frank Hackett, who has become famous as the keeper of the lightship Kewanee, has been in Cleveland for some time laying up his boat and has returned to Malden, his home. The Kewanee is the pride of Capt. Geo. P. McKay, treasurer of the Lake Carriers' Association.

Now that the boats have stopped running, the sailors who live in Malden will gather round the fireside and tell stories about the biggest strings of fish they have caught in their day, the greatest number of ducks they have shot and the biggest stack of chips they have raked in at Malden's favorite game of "draw."

The Gilchrist Transportation Co., of Cleveland, has brought libel suit against the Michigan Central railroad for injuries sustained by the steamer John Sherwin at Bay City on April 26 last. The Sherwin had just left the ship yard for her maiden trip and it is alleged that one of the Michigan Central bridges was not open in time for the boat to pass through without damage. Compensation in the sum of \$7,511.98 is asked for.

Detroit Lodge No. 7, Ship Masters' Association, elected the following officers last week: President, Capt. Alexander J. McKay; first vice president, Capt. Fred Simpson; second vice president, Capt. A. J. Mahon; recording secretary, Capt. L. P. Anderhalt; financial secretary and treasurer, Capt. Temese LeMay; trustee, Capt. A. J. Fox. Capt. Alexander McKay was chosen delegate to the Grand Lodge and Capt. M. G. McIntosh was selected as alternate.

The cost of breaking the ice jam in St. Mary's river during December amounted to \$14,000. The channel became blocked at the Dyke on Dec. 8 and the ice crushing steamer Algolah and several of the Great Lakes Towing Co.'s tugs were engaged to open it. The work of releasing the fleet was under the general direction of the government engineers assisted by Capt. W. W. Smith, marine superintendent of the Pittsburgh Steamship Co. President Harry Coulby, of the Pittsburgh Steamship Co., who ordered the jam broken also spent several days at the Soo. An assessment to meet the expense has just been levied by Mr. Coulby, charging small boats \$75 and the large carriers, \$110 each. The assessment is a very reasonable one.